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CLEANINGS

A JOURNAL
DEVOTED
TO BEES,
AND HONEY,
AND HOME
INTERESTS.

THE CULTURE

ILLUSTRATED
SEMI-MONTHLY

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IN *Centralblatt* it is reported that, when honey is used as a lubricant in making foundation, bees take more readily to such foundation than to others.

HONOR to whom honor. *Le Progres Apicole* gives a picture of a cell-protector it says I invented. Sorry to say I wasn't smart enough to do so — it was our good friend N. D. West.

THE USE OF HONEY is recommended in *L'Abeille de l'Aisne*, for insomnia, when it proceeds from indigestion, and in some cases when it results from a wearied brain or muscular system.

TO REAR A DRONE costs .0141 oz. honey; and after it is reared it will consume .00635 oz. of honey daily.—*Bulletin Alsace-Lorraine*. [This is splitting hairs; but I believe it is not far from the truth.—ED.]

A BLUER SEASON up to June 3d I think I never knew — so cold that fire is needed yet, and many colonies have not held their own. A severe drought is now on, which has obliged some to plow up their fields of oats. I made a mistake in taking bees out of the cellar too early. There is a big show for white clover, but a small show of bees to work it.

M. A. GILL may be right, page 467, in preferring starters to full combs for swarms, and certainly he is not alone in that view. But in my own practice, if I had the full combs I do not think I'd melt them up and use foundation. With only four combs in the brood-chamber and a lively queen, I should expect her to hold her own against the honey-storers. To give a whole hiveful of full combs would be another story.

"THE PERFECT HIVE-COVER for Colorado is yet to be made," quoth ye editor, page 468. I wonder how mine would work. It is much like the one described, with dead-air space, but covered with tin. Possibly paper would do as well. Out of the fifty in use for two years, not one has twisted, the only flat cover

I've ever tried of which that could be said. It is essential that the grain of the two thicknesses of boards shall run in opposite directions. That prevents twisting.

MANY A POUND of pollen is allowed to go to waste by those who would not think of wasting that amount of honey. Yet in some regions a pound of pollen may be worth as much as a pound of honey. Dr. Planta's analysis showed the pollen of the hazel to contain 5 per cent nitrogenous material, 8 per cent cane sugar, and 5 per cent starch.

BEES IN WINTER, when short of stores, have the same appearance as bees that die of starvation in summer. But death is not real, only apparent. Bring them into a warm room; and if the apparent death has not been too long continued they revive. So starvation in winter, properly speaking, is not starvation, but death by freezing.—*German Journal*.

THE *Rocky Mountain Bee Journal* seems to have sprung out of the ground. Who knew they had a man out there by the name of Morehouse who could get up so beautiful a publication, and edit it like a veteran? Lovejoy, Rauchfuss, Thompson, and the other sages on the western frontier, know a lot about bee-keeping; and if that journal doesn't live it will be a wonder.

THE COLDER the weather in winter, the warmer the center of the cluster. That being the case, theory would lead us to expect brood-rearing earlier in cold than in warm winters. I've often wondered whether that theory was indorsed by practice. Now comes L. Stachelhausen, in *Southland Queen*, and says: "When I kept bees in a cold climate, more than 30 years ago, I observed in outdoor wintering that, the colder the winter, the earlier brood-rearing commenced."

"LEST WE FORGET," Editor Watheler, of *Le Rucher Belge*, expresses the hope that the eminent editor of *CLEANINGS* will do his best to learn and make known Swarthmore's plan of wintering 75 queens in one colony. [Those Frenchmen are great fellows in the use of adjectives. "Eminent" doesn't fit me, and never will. However, I appreciate the motive back of it, and hereby ask Swarthmore to tell how he does it before he forgets it.—ED.]

I MOVE a reconsideration of a Straw and its footnote on page 80. Sylviac scouted the idea of a bee carrying a load weighing more than its own body. I suppose I should have said a load of nectar, and ask Sylviac's pardon for the omission. But the rest of the Straw shows that he meant only what was carried *in its sac*, and Sylviac is right to rail at the idea of a bee carrying in its sac enough nectar to weigh more than its own body. [I stand corrected with you.—ED.]

SCHACHINGER's investigations showed that, when 20,000 bees stored daily $\frac{1}{2}$ lb. honey,
30,000 " " $1\frac{1}{2}$ " "
40,000 " " 4 " "

It's well to repeat this occasionally, to show the importance of having strong colonies. In the stronger colony a larger proportion of the bees go afield, and a smaller proportion of the product is used for daily consumption. [This is according to observation and experience. I have seen many colonies on this, my western trip, but many—too many—are too weak to get the best results in honey.—ED.]

IS THE LARGE INTESTINE of a bee large enough to contain all the feces that will be stored in it during four months' confinement? There ought to be less undigested remains of a bee's food than of a man's food proportionally; but if it is counted the same, there will be $\frac{1}{8}$ residue or $7\frac{1}{2}$ mg. in four months. Prof. Fisher's many weighings of bees before and after a cleansing flight showed that the excrement discharged by each bee was 15.86 milligrams, showing that, under good conditions, a bee can stand not only four months but eight months without emptying itself. So says *Illustrierte Monats Blaetter fuer Bienenzucht*.

ACCORDING to a writer in *L'Apiculteur*, bees in summer do not stay in the hive on certain days because it is too cold, but because there is no nectar to be had. He finds that the secretion of nectar has direct relation to the amount of light and heat. Some plants secrete nectar in partial shade; but the rule is, that nectar secretion ceases, even with partial shade—the brighter the sun and the stronger the heat, the more nectar. That agrees with my observation that the days when one is afraid of the sunstroke are the ones when the honey rolls in. [This agrees very well with what the bee-keepers in the Salt River Valley, Arizona, have been telling me. But they want the heat to be from 95 to 110 in the shade, to get the best results. When the temperature is below 90 there is quite a perceptible decrease in the inflow of honey. Apparently the Arizonians want more heat than we of the North.—ED.]

THE BLUE-HEAD, mentioned on p. 465, Mr. Editor, you think the same as "bareheaded" bees which hatch out all right. If you will read again you will hardly think the bees in question will hatch out all right, for "the pupae are dead." Possibly the observer may be mistaken as to their death. [Years ago, just before this matter was considered in the A B C book, bee-keepers kept writing in to know what disease was in their brood. Some of

them thought it was foul brood; but I had been studying the same thing, and told them they were mistaken—the brood was not dead; and that, even if the pupae were so loose as to shake up and down in their cells when the comb was tipped, they would hatch out all right. I watched them daily, and sometimes almost hourly, for a good part of a season. Now, I do not wish to be contrary; but I do not believe those bareheaded pupae were dead. At any rate, *ours* did not appear to be "sensible of the fact," for they hatched out into perfect live bees.—A. I. R.]



Propolis dissolved in alcohol, with linseed oil added, is said to give a durable red paint for hives, says the *Leip. Bienenzeitung*.

F. Mehrling, of Germany, the inventor of comb foundation, is also the first one who ever transferred larvæ. He described the method and his experience minutely in the *Dorf-Zeitung* for 1866.

Hives were made of plaster of Paris in Germany years ago. The latest is a hive made of cement mixed with cut straw. It receives a glazing on the outside which would be the equivalent to paint on wooden hives.

W. Wankler, of Germany, makes the claim in *L. Bienenzeitung*, 1893, page 112, to have invented and used an implement of his own for measuring bees' tongues, in 1882. He says he exhibited the same at a bee-keepers' meeting and exhibition in Frankfort in 1883, where he sold the instrument to Frank Bentton.

"Received his just dues," as reported in *Centralblatt* and *L. Bienenzeitung*. A grocer in Cologne, Germany, has been convicted of having adulterated honey. For several years he had been carrying on a business of manufacturing and selling a 20-per-cent honey mixture. Sixty witnesses and nine experts were present at the trial. The enterprising grocer received one month's imprisonment, and was fined \$150.

The following, from the *Rural New-Yorker*, is good advice:

Although the time of applying Bordeaux depends upon circumstances—the locality, the condition of the weather, and the kind of plant treated—a general practice may be followed of first spraying just before the fruit-buds appear; next, just after the blossoms fall, and again about two weeks later. If the season is unusually wet a number of other sprayings should be practiced. Under no conditions should the spray be applied while the plants or trees are blooming, as pollination may be seriously affected.

Charton Froissard, of France, made use of an implement which he invented for measuring bees' tongues. He is reported in *Leipziger Bienenzeitung*, 1893, as having conceived the same idea the American bee-keepers are bent on at present; viz., breeding long-tongued bees able to secure the honey from red clover. It is not stated what success Mr. F. has had in improving his stock in the line of long tongues. Perhaps our friend Dardant, who is at home in France, might tell us or trace the matter up.

W

E. Reidenbach, editor of the *Pfälzer Bienen Zucht*, writes in regard to the use of old brood combs; "Long-continued breeding increases the thickness of the midrib very materially—sometimes up to 5 millimeters. The cell walls of old combs, however, are scarcely perceptibly thicker than those of new comb, because the bees have ways of gnawing away the silken cocoons. The cell walls of brood-combs are probably lengthened according as the midrib thickens from the accumulating deposits."

N. Ludwig says to this, in the *Leipziger Bienenzeitung* that his own observation coincides with Reidenbach's, and claims that, after making exact measurements, there exists no difference in general roominess between the brood-cells of old and new comb.



SEPARATORS.

Early History of; why it is Not Wise to Dispense with them.

BY F. GREINER.

The subject of separators versus no separators has been gone over a number of times during the past 25 years, and the evidence has always been greatly in favor of separators. The reason why a small minority of our bee-keepers still cling to the open or undivided super lies in the fact that there exists a great difference in people. Some are satisfied if they produce an article that will just pass, while others do not rest easy until they have reached actual perfection. This difference may be noticed everywhere in life. For instance, in planting a field to corn, some farmers have the rows as crooked as an old-fashioned rail fence, and in planting out an orchard the trees are put in haphazard fashion. Other farmers will have the rows as straight as a string. The crooked rows would be an eyesore to me, and trouble me nights. The imperfections in the out-of-date section honey would produce a like effect upon me. As to how we came to use separators, there is a little history connected with that. It might interest some.

When we first commenced keeping bees on a more scientific basis, i. e., using frame hives, our super made no use of separators in any form. For several years—and as beginners, mind you—we produced comb honey for the city market without separators, and without the use of comb foundation, not even for starters. Comb foundation was not commonly used, as now, and we always tried to collect enough newly built comb during the season to start our boxes.

Some well-known honey-producer once expressed his sentiments thus: "The success to produce comb honey without separators depends upon the skill of the apiarist," although it appeared later that it would be desirable, if not necessary, to crate such non-separator-raised honey in the order it had been built by the bees, and that a certain per cent of the section honey could not be crated at all. I consider it of great importance to be able to crate our honey just as it happens, or as we think best—a grave disadvantage if we must crate in the same order as the sections came out of the super; the matter of uncratable sections perhaps amounts to but little.

As that beginner in keeping bees, I certainly did not pretend to be skillful; still, I found very little trouble to make a success in raising comb honey in open supers. At present, with the comb foundation to use for starters or in full sheets, it would indeed be easy enough to raise a fair or at least a salable article.

There was, of course, a reason why we did not continue the use of undivided supers. We were using a shipping-case with two glass fronts at that time, and it required six nice straight combs for facers to each 15 sections. While we could crate very nearly all the combs built in the open supers, it was, nevertheless, a fact that they were lacking that uniformity equally desirable to the grocer and to the apiarist; in particular the faces were not perfectly on a level, but were wavy in nearly all cases. The most desirable face combs we often found in the outside rows, the face next to the hive-wall being perfect. The thought occurred to us, "Why not have more hive-walls?" So, sure enough, we did just as friend Gill did (see page 335, Apr. 15th GLEANINGS), and put in some dividers. First we used but two; and as that particular honey season advanced we fitted other supers with more. We were so well pleased with the looks of that honey that we adopted the separator to be used between all combs, and we have never had reason to be sorry for making the change.

Tin and zinc were the materials of our first separators. The supers we used at that time were such that a stiffer divider seemed much more desirable; and since the wooden side of the hive answered quite well to produce a perfectly smooth face on the outside comb, we saw no reason why the same material should not answer the same purpose in the middle of the hive. We brought the matter up for discussion. Mr. A. I. Root and Mr. James Heddon somewhat discouraged us as to the adaptability of wood for separators. I think you will find some of these things recorded

in GLEANINGS and *American Bee Journal* of 1878 and '79. Notwithstanding, after testing paper and other materials we changed all our supers at that time, adapting them to wooden separators.

The comb surfaces of our honey since have been so perfect, the weight of the sections so uniform, that I should be very unwilling to go back to the open super. It would certainly be a step backward. I can see no material advantage in dispensing with the separator. As to getting along without them when trying to produce honey in no-beeway sections, that simply is out of the question. What looks better than a no-beeway section brimful of honey?

Naples, N. Y.

[I once heard an extensive bee-keeper get up in convention and say he had no use for separators—that he could and did dispense with them; and, what was more, he got just as good prices for his non-separated honey as he did for that produced with them. It so happened that, months afterward, I ran across some of this man's non-separated honey; and, of all the "kicks" I heard from the buyer! The long and short of it was, he would never buy any more of that honey again. It was too crooked, too bulged, too every thing; so when I hear non-separator man talk I wonder whether he holds his trade.—ED.]

SWARTHMORE'S SYSTEM OF QUEEN-REARING.

How to Maintain and Handle the Miniature Nuclei in Brood-frames, Described on Page 434.

BY SWARTHMORE.

When the little combs are heavy with brood and honey it has been my practice to bind the boxes (described on page 434 of our issue for May 15) snugly together with three strands of cord or twine after the lids have all been adjusted. Pass the cords around each row of boxes longitudinally, and tie a slip knot at one corner of the top-bar. Any rough handling can not then loosen the lids.

A piece of water-proof (not tar) paper folded neatly and tied securely over the top of each frame (as illustrated at the bottom of page 436), when set out on the stakes will prevent rain from entering the compartments. It will also protect the frame and boxes from the sun's rays, and will give more comfort to the bees occupying such close quarters. If possible, place the frames where they will be shaded the greater part of the day, and let them stand high enough to get what air there is stirring.

When the time comes for caging the queens, just untie the middle cord first, and then remove the top box by tilting the tier toward you. Remove the back lid and keep a sharp eye for the queen. If not found on that side,

lay the back lid on the grass, inside up, then carefully remove the front lid with the box in hand. When you see the queen, place the front lid crosswise on the back lid, always inside up, and then lift your queen up quickly but gently. Then, lastly, stand the little frame directly across the lids, and cage the queen. Now put the box together once more, and proceed to examine the lower box in the middle row. After the middle row has been removed, the side boxes will easily draw from the frame.

If any of these little colonies are found queenless, and too weak to care for themselves longer, they should be doubled with

FIG. 1.

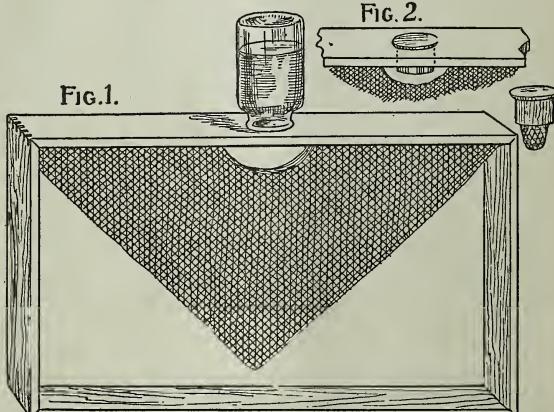
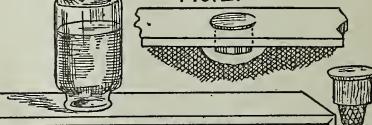


FIG. 2.



the one in the same row by placing them back to back. The feeder (Fig. 2, p. 436) is then placed on one of the two front lids. Tie all snugly together with the cord that was used about the frame, and in three days another virgin can be run in, as Alley does it, with tobacco smoke, or a hatching cell may be given as shown in the illustration above.

Fig. 1 is one of the section-box frames, shown on p. 435, May 15th issue, with a $\frac{3}{4}$ -inch hole cut through its top-bar for the insertion of a liquid feeder (salt-shaker), or a shell containing a ripe queen-cell. Fig. 2 shows the manner of inserting the shells; and just below this may be seen a fully developed queen-cell built from a shell cup which will herein-after be described.

Some time previous to the introduction of the second young queen, the back lids coming together may be removed, and in their stead may be placed a rim of half-inch stuff between the boxes, to give the necessary bee-space. This will give the new queen the range of both combs, much to the advantage of the little colony.

It should be understood that the doubled nuclei are not again put back into the frame, as illustrated at the bottom of page 436, May 15, but are placed directly on the grass, with a piece of board under them to keep them out of the wet; or they may be hung on a single stake a few inches from the ground.

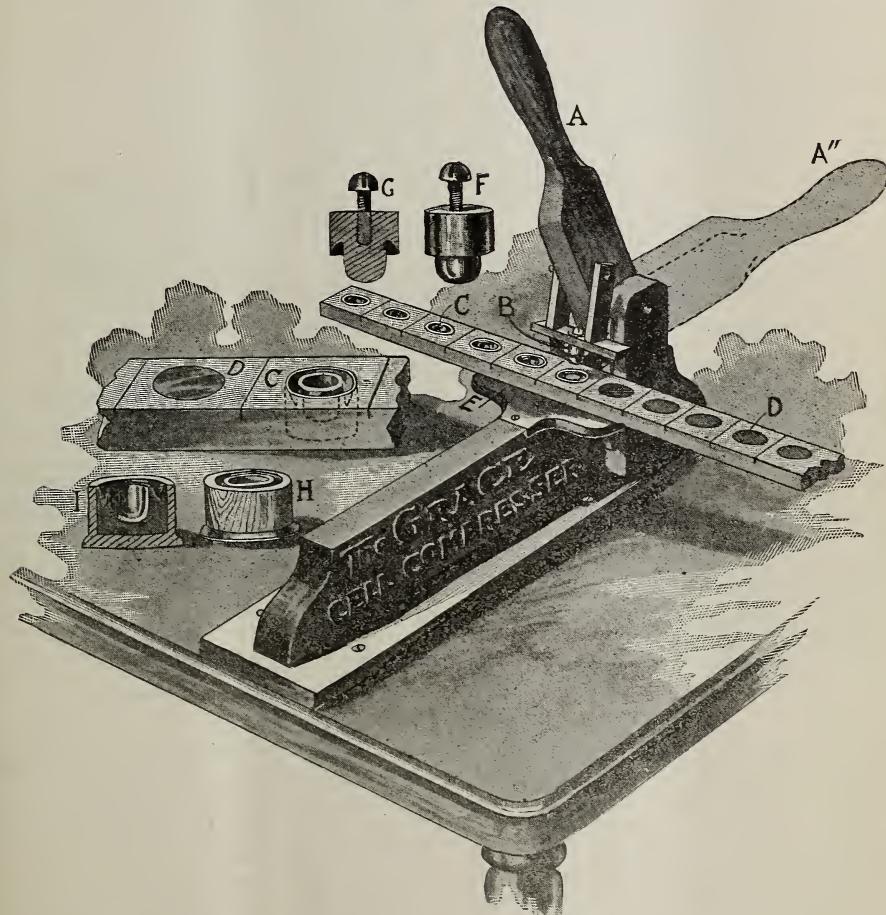
If these little colonies are kept well fed with

sugar and water they will last the season through, and will also turn out just as many queens as any nucleus hive.

As the season nears its close, gradually double all nuclei down until none are left. Carefully preserve the little combs for another and yet another season's use.

We have formed as many as 40 of these miniature colonies from a single full stock, and once we took a young laying queen from all but two on the first round. One must leave

plained in the first part, and adjust the lids. Expose the zincs on all sides, and cork the flight-holes. Run a young laying queen into each compartment, and hang the frames forthwith in a hive containing bees that have been queenless three days. No unsealed brood should be allowed outside the compartments; and, to make assurance doubly sure, use a little tobacco smoke as you hang in the frames containing the queens. To keep up the full strength of such colonies, a frame of hatching



A.—Lever for operating.
 A''—Lever thrown back to get at cell cup.
 B.—Brass cell-moulding cap.
 C.—Molded cells in bar.
 D.—Holes filled with wax.

E.—Bed-plate.
 F.—Enlarged view of molding-cap.
 G.—Sectional view of molding-cap.
 H.—Wood cell cup with molded cell.
 I.—Wood cell cup, sectional view.

the young laying queens in these section-box fertilizing-hives long enough for them to restock the combs with brood, or they will soon dwindle down to almost nothing.

METHODS OF COLATING.

Young laying queens may be preserved an entire season, each in a compartment by herself, by proceeding as follows:

Secure frames of brood and honey, as ex-

brood should be given occasionally. Feed thin sugar syrup flavored with a little honey, or frames of capped stores may be put into the hive.

The secret of success in the introduction of a plurality of queens lies in the giving of them all at one time to bees that have been queenless but three days. An indefinite number of queens may be confined in boxes or cages arranged in such a way that none can

come in contact, yet allowing the bees freedom to go and come, to do as they will.

If one has to draw often from his "magazine of laying queens" it is much handier to tie each box separately with tough cord, and place them in the hive, without frames, arranged in tiers. Magazine hives should be kept in a cool shady place.

THE GRACE CELL-COMPRESSOR; A SIMPLE
HAND TOOL FOR RAPIDLY FORMING
QUEEN-CELL CUPS IN SOLID PLUGS
OF COOL WAX BY PRESSURE;
SHELL CUPS AND IMPROV-
ED HATCHERY.

The cut on the preceding page is an excellent and most comprehensive illustration of a very handy little machine for making compressed queen-cell cups or goblets into wax plugs for queen-rearing.

A brass die, F, is screwed fast to a plunger, as shown at B. This plunger is jointed to the handle, A, and the handle is pivoted to the two uprights, bolted fast to a rigid frame, thus forming a lever; and when the handle is brought down from the point indicated by the

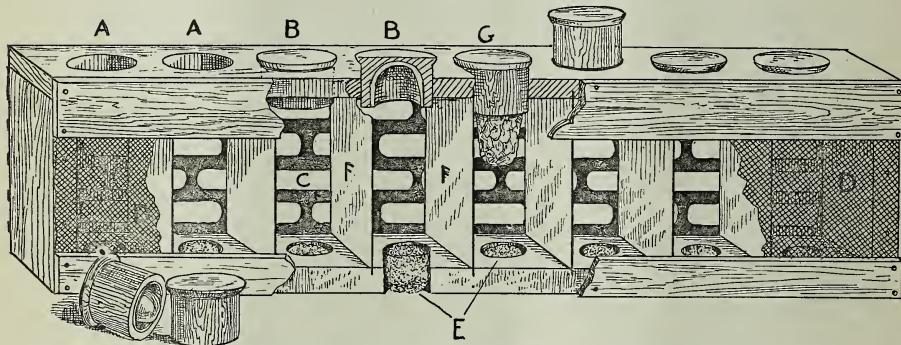
it is moistened, each time the handle is lifted up, either by the tongue of the operator or with a sponge saturated with castile soap and water, or olive oil.

Down at one side of the machine will be noticed little wooden shells into which some cups have been compressed. These "shell cups" are to render queen-cells more easily removable or separable, which will be herein-after fully explained.

The machine does most excellent work in these shell cups, at the rate of from 10 to 15 a minute—all perfectly formed and partially drawn, so that the bees will accept them quite readily.

The cut below is a perfect drawing of an improved queen-nursery cage for the incubation of cells and the confining of virgin or laying queens.

The top-bar has a series of eight $\frac{3}{4}$ -inch auger-holes, one inch apart, along its entire length, into which wooden shells fit snugly. A, A, are shells removed entirely from the holes. B (1) is a shell in place, and B (2) is a sectional view of the same. G shows how the cells appear when fully drawn out by the



THE SWARTHMORE QUEEN-NURSERY CAGE IMPROVED, SHOWING THE APPLICATION OF SHELL CUPS.

dotted lines, the die is forced into the center of the wax plug, forming a perfectly smooth indentation, like the base of a natural queen-cell, into which indentation larvæ may be afterward transferred or grafted, and from which bees will construct queen-cells.

The pressure not only makes a cavity in the wax, but it forces out the edge of the cell to a certain extent, which is very acceptable to the bees because of its natural form and appearance.

A Swarthmore nursery-cage top-bar is shown under the die, ready for compressing. To the left are the finished cups, and to the right are plugs of wax yet to be pressed. These bars are placed to accurate gauge upon the table. Each time the handle is brought down the bar is slid one notch further. In this way very rapid and perfect cell-work can be done with little or no exertion. Dies for the transfer of "cradle and all," by the Pridgen method, are made pointed at the end, and work well in the compressor.

To prevent the die from sticking in the wax

bees. Along the bottom-bar is a corresponding row of half-inch holes to receive bits of sponge for the purpose of feeding the young queens when confined entirely with wire. A sponge in place, and a sectional view of the same, is shown at E.

Between the holes in each bar is a saw-cut for receiving the division-tins, F, F, which are easily slid in or out at will.

Perforated zinc covers the front side, and wire netting is placed over the back side of this cage. The zinc is removable. The netting is nailed fast to the cage by means of thin strips at top and bottom. These strips, also the netting, D, D, are shown torn away in the drawing.

The top-bar is removable, and may be used in a frame as recommended by some of the leading breeders of the country.

These cages fit six to the Hoffman frame—two across and three to the tier, thus forming compartments for 48 queens to the frame—a great saving of space in the incubation of cells or the storing of virgin or fertile queens when

rearing on a large scale. In a booklet soon to be published I shall endeavor to explain fully the details of the storage of numerous queens in a single colony, with much other matter as yet unpublished.

MODERN METHODS OF QUEEN-REARING.

The Progress Made During Late Years.

BY W. H. PRIDGEN.

Since the dawn of modern apiculture there has not been a time when there was the same interest manifested in queens and queen-rearing as now. The tendency on the part of the honey-producers is, to a greater extent than ever before, to rear their own—not only because a larger per cent of those reared at home give better results than those transmitted through the mails, all else being equal, but because the essential conditions necessary for the production of those of the highest type are more generally understood.

The cardinal points were given to the public years ago by men who spent much time and talent in experimenting; and by their persistent efforts the foundation was laid, not only for the most fascinating branch of our pursuit, but the most promising field in which to spend our thoughts and energies.

Bees are no longer looked upon as bees without considering their qualities; but each progressive bee-keeper is continually on the lookout for superior honey-gatherers and other desirable traits shown by individual colonies.

The ability to rear our own queens from the best mothers, and control their mating to some extent by weeding out and preventing the production of objectionable drones, and thus, step by step, make permanent improvements in the working qualities of our bees, not only increases our profits, but lends enchantment to pleasure.

We are indebted to Messrs. Doolittle and Alley for the fundamental principles of what is termed artificial or scientific queen-rearing, who differ in some of the minor details.

For instance, Mr. Doolittle uses artificial queen-cups to which he transfers the larvæ with a toothpick, while Mr. Alley prefers strips of worker comb containing eggs ready to hatch, over which the bees fashion the cells to their own liking.

As these veterans differ on some of the less essential points, so also do others differ with them, and consequently the subject is kept alive—short cuts devised, and modifications made by the lovers of the art.

In some of the manipulations, as much is accomplished in a few hours now as was formerly done in as many days; but what works perfectly in the hands of those who conceive new ideas and adopt measures to carry them into effect are often considered to be failures by others who have become proficient in more faulty methods with which they are acquainted; and hence the diversity of opinion as to the best or easiest way to accomplish certain ends.

Without these differences of opinion and

failures that lead to investigation, new ideas or the different ways of accomplishing the same thing, would not come to light; and in going over the ground that has been covered by those who have contributed toward the success of modern queen-rearing, the object is to lend a helping hand toward a further advancement of the industry.

As a rule, the reader cares but little how, when, or from whom the writer gained his information, but generally prefers the part relating to the object in view; and inasmuch as it is generally known who advanced the different ideas that make up our queen-rearing system, in complying with the request for a more elaborate treatise on the subject these explanations will be omitted to some extent, without any intention of doing any one an injustice.

Creek, N. C.

CAPPINGS.

Bees that are Rustlers; Covers adapted for Warmer Climates; Comb Honey in Two-pound Sections; Straining Preferable to Settling Extracted Honey; Fertilizing Queens in Confinement.

BY E. H. SCHAEFFLE.

At present the efforts of the queen-breeders seem to be confined to stretching the tongues of their stock to the utmost limit. While this elongating of the bee's tongue may be of benefit to those bee-keepers living in red-clover sections, to the average apiarist the working qualities of the bee are of far more importance. It is a well-known fact that some stands of bees will put up several hundred pounds of honey in a season, while others in the same apiary will not give a pound of surplus. I hold that the bee wanted is one that will give the most honey under average conditions. When I sit down by one of my best colonies and compare their movements with that of the average hive I find that the rustlers come out of the hive on the run, stop an instant to gather themselves for the spring, and then are away like a bullet. Turning to the average hive I see that the bees come out leisurely, slowly crawl half way up the front of the hive, stop for the spring, and then, springing out slowly, circle and leisurely wing their way to the fields. Returning, the rustlers come down on the alighting-board with a bounce, and rush into the hive as though the queen's business could not wait, while the bees of the average hive drop on to the alighting-board exhausted, rest there for several seconds, and then slowly crawl into the hive.

Now, I can not go with the bees to the "fields and far away," but it is safe to assume that they work in the field as they do at the hive. If this is the case, the rustlers will make two trips to the sluggards' one. I believe we can, by careful selection, produce a strain of rustlers just as the fast trotter has been developed.

A non-warping top is a desirable feature in this hot climate. Last season I set out in the blazing sun three ten-frame hives. One of

these had a cover of $\frac{1}{2}$ -inch stuff; another the usual flat cover, and the third a ventilated cover. The thin-top hive got so hot along the top that the combs all melted loose. The single flat cover warped, while the ventilated cover retained its shape. This ventilated cover is made of a thin board, flat, over the hive. This is let into a strip at each end, and has in addition a $\frac{1}{2}$ -inch strip nailed across the center to prevent warping. The cover is a half-inch above, and is the usual three-piece cover, extending $\frac{1}{2}$ inch beyond the sides, to shed rain. It will be noticed that this test was on the wide ten-frame hive. The usual eight-frame hive is not so apt to warp its covers.

For twenty years past I have been producing comb honey in two-pound sections. My experience has been that I could secure 50 per cent more in this size than in the usual one-pound size. At the same time I have had a number of one-pound hives in operation; but, with the exception of two boom years, I have been compelled each year to take the sections off and put on extracting-supers in order to get some honey from these hives. The usual one-pound section with its separators compels the bees to cluster in small bunches of a half-teacupful each; prevents sociability and the massing of large numbers of bees to make comb. This season I have gone back to an old style, and made frames to take (two deep) Danzenbaker sections. These frames each hold 8 sections, or 64 to the case, using a ten-frame hive. Now, in this super there are no separators, the bees hanging in one sheet from the top of the upper section to the bottom of the lower, and filling all of the space between two sections. By this arrangement I get about four times as many bees to work in the same space. The bees take to these sections kindly, and I expect good results if the season continues favorable.

It is not always convenient to have to wait for the particles of wax and pollen to rise to the surface before canning. I can all of my honey as fast as extracted. First the honey is allowed to ripen on the hive. If in shaking off the bees the honey flies out of the comb, that comb is returned to be ripened up, and only those taken that hold their honey when shaken. When the honey is extracted it is run into a wire-cloth strainer that catches all the small particles of wax, bees, and grubs. From this strainer it flows into another, made of cheese-cloth. When the honey leaves this it is free from all particles of pollen, bright and clear, and ready to go direct to the hive. Where honey is not remelted the presence of small particles of pollen may not injure the honey; but if it is remelted it will color the honey. Some object to the cheese-cloth on account of its being a slow way of straining; but this depends entirely on the size of the strainer. Mine is 8 inches across and a foot deep, reinforced by strips of cloth sewn over the sack. This will allow the warm honey to flow as fast as the gate on the extractor will deliver it.

I find that dark combs color honey. Californians allow the queen access to the supers in the early spring. In consequence, many of

the combs are dark, and the honey from them a shade darker, so that, to get a shade lighter honey, it will pay to soak these combs in water before using, and have the water dissolve and take out the color that would otherwise go into the honey.

Some fifteen years ago I tried fertilizing queens in confinement. I found the queen more than willing, but I could do nothing with the drones. Mr. Davitte has succeeded by first accustoming the drones to confinement before liberating the queens, and, second, by using drones that are from queenless hives. It is essential that the drones be content, and that they be from hives which, being queenless, have their drones "fertilized."

Murphys, Cal., Mar. 20.

ARE LONG TONGUES OF VALUE ONLY IN RED-CLOVER REGIONS?

BY DR. C. C. MILLER.

In the *American Bee Journal*, page 293, G. M. Doolittle enters a protest against the fad for long tongues because they are not of special value where there are no flowers with tubes too long for the reach of ordinary bees, and quotes a remark from *GLEANINGS* which he puts in capitals and italics as follows: "The movement for longer tongues is simply to get the red-clover crop of the North, which now is practically all wasted. The bees, NO ONE CLAIMS, would be any better except on that account."

Now I want to know who authorized either Stenog or Bro. Doolittle to say that red-clover blossoms are the only ones with tubes too deep for ordinary bees, and yet not so deep that they can not be utilized by some of the bees now in existence that have tongues of unusual length. Are you sure that there are never white clover blossoms so deep that some bees can not reach clear to the bottom?

In one place Mr. Doolittle is not quite so bad as Stenog, for the former does not leave red clover as the solitary example of a honey-plant that keeps its nectar tantalizingly near the reach of ordinary bees, and yet just beyond that reach, for he says, "Long-tongued bees would be an advantage only to those residing where red clover and other long-tubed flowers abound." That's as much as to say that, if there would be a gain from red clover through long tongues, there might also be a gain from other plants with long tubes, while Stenog bars out all but red clover. To be sure, Mr. Doolittle does seem to do the same barring-out in another place, where he says: "I am satisfied that long tongues are of advantage only to those in red-clover districts," and then he immediately hastens to throw some doubt upon the red-clover gain by adding, "if they are of any special advantage anywhere," which seems to throw doubt upon their special value in any case.

Mr. Doolittle calls attention to the fact that in New Mexico and elsewhere, where no red clover grows, there come reports that the bees that do the best are those with long tongues.

I do not deny that it is possible that long tongues may be generally accompanied by other good qualities, thus accounting for the superiority of long tongues where no red clover is found; but it seems to me more reasonable to suppose that the extra gain is made on flowers with tubes longer than ordinary. Why should it be considered a strange thing that other flowers should have tubes of the same depth as red clover? It is possible that many of the flowers commonly visited for nectar have tubes of different lengths, some of them accessible only to tongues of unusual length, thus giving long tongues the advantage aside from red clover. Again, a flower-tube may be of such a depth that only part of its contents can be reached by a tongue of ordinary length, while one a little longer may drain it to the bottom.

Please don't understand that I believe that length of tongue is the only thing to be considered. I should prefer to make selection by noting the amount of stores gathered rather than by measuring tongues. It is possible that, among several colonies, the one with longest tongues may be the poorest. One colony may excel it because of greater diligence. Another may work earlier in the day. Another may excel because of greater longevity. So I think it would be unwise to depend upon tongue-length alone. But I do insist that the advantage of long tongues has not been proven to be exclusively associated with red clover; and it is possible—not probable, I think—that the gain from other flowers with long tubes may be even greater than from red clover.

Marengo, Ill.

[It is true that a colony, A, with long tongues, *may* do less execution than another colony, B, with shorter tongues. But that is no argument against the value of long tongues. If B, because of its superior industry, does better than its longer-tongued neighbor, A, might it not do *still better* if it had the same length of tongue as A? The truth in a nutshell is about this: In any case where there is nectar to be found in flower-tubes beyond the reach of ordinary tongues, if two colonies are alike in all other respects, the one with the longer tongue-reach will have the advantage.

—ED.]

FASTENING FOUNDATION IN BROOD-FRAMES AND SECTIONS.

A Unique and Simple Plan; How to Make the Tool; How to Prevent Foundation in Brood-frames from Sagging, without Wires or Wooden Stays.

BY C. DAVENPORT.

I have noticed that, in most improvements (or shall I say changes?) made in our fixtures, the firm GLEANINGS represents leads, and the others all follow in time. I am willing to concede, and know, that most of these changes have been real, and some of them great improvements over what they supersede. This, for instance, will apply to the present styles

of self-spacing brood-frames over the old loose hanging or unspacing kind; but I consider a molded top-bar, or one that has a crease or groove cut in the center of it to receive the foundation, inferior in many ways to one that is simply flat on the bottom side. It is, for one thing, much more work to clean them of wax and propolis if, as is always the case to a greater or less extent, this has to be done after they have been used; and, the foundation, either full sheets or starters, can be fastened to a flat top far quicker and easier than it can to either a molded or grooved one in the usual way.

I will here describe my method of doing this, for the principle will work with either molded or grooved bars; and starters or full sheets can be fastened in sections by this plan nearly as fast as with a hot-plate machine; in fact, I often use it when putting full sheets in sections, although I have two machines for this work. The whole apparatus costs but a few cents aside from a small amount of work. One of the implements required is a small instrument made on the same principle as a medicine-dropper. Mine is made of a tin tube about 4 inches long, and not quite $\frac{1}{2}$ inch in diameter. The lower end of this tube is gradually tapered down to a point, so the hole at the extreme end is a little less in size than what it would be on an ordinary lead-pencil if the lead were removed to the upper part of the tube. A rubber nipple or bulb is attached, and it is important to have this rubber fit over the tube tight enough to exclude air. When the lower end is placed in melted wax, or any other liquid, with the rubber bulb compressed between the thumb and finger, as soon as it is allowed to expand, by air suction it draws some of the liquid up into the tube. By allowing the rubber to remain expanded the tube will not leak when withdrawn, no matter what position it is held in. Pressure on the rubber forces the liquid out slowly or fast, just as desired.

For fastening the foundation in brood-frames I have a board a trifle wider than a frame is deep, and a little longer than the length of four frames. Along one side of this board are fastened four pieces that are $\frac{1}{4}$ inch smaller than the inside measurement of the frame, and these pieces are just half as thick as the top-bars of the frames. It is on the same principle as the piece on the Daisy foundation-machine, over which the section is placed, so that, when a frame is placed over one of these pieces on the board, the foundation, when placed inside the frame, will be held perfectly true and straight, exactly in the center of the frame. When used, this long board is set up edgewise on a bench or table, and propped up so it will lean over from the operator. A frame is placed over one of these pieces, with the top-bar down on the lower side next the bench. On the lower side of the long board, under each piece over which the frames fit, is nailed a narrow strip on which the top-bar rests. With the board in position a frame is placed on at one end, the foundation placed in, and, if I have made my description plain, it will be seen that the foundation rests exact-

ly in the center of the top-bar, and is held there by the piece over which the frame fits, and the angle, or leaning way, at which the long board is placed. A dish of melted wax stands over a small lamp at one end of the table. Some is taken up in the machine I have described, the point held close to the edge of the foundation where it rests on the top-bar. As the dropper, or whatever one likes to call it, is moved slowly along the top-bar, a very small but continuous stream of melted wax is dropped between the edge of the foundation and top-bar. Then another frame is laid over the next piece on the board, and so on until the foundation has been fastened in the four frames.

By this time the melted wax on the first one has set enough to allow the frame to be hung in an empty hive near by; then by the time another frame is filled, the second frame on the board can be removed, and so on as long as there are frames to fill. After things are in place, and the wax melted, either full sheets or starters can be fastened in frames very rapidly by this method. But speed is not so much the advantage of this plan as the fact that the foundation is fastened so it hangs perfectly true and straight in the frame, and can be pulled in pieces without being loosened from the top-bar. Of course, this method will work just as well if the frames were wired. For fastening full sheets in sections I have a board similar, except in size.

The great superiority of the wax-dropper I have described over any I have seen mentioned, is the absolute control it gives the operator of the melted wax, which can either be dropped slowly or rapidly, or a small continuous stream can be forced out; even the size of the stream can be regulated by the pressure on the rubber. It is very easy to operate it, and the only difficulty one can have with it is in drawing too much wax up into the tube so some gets in the rubber. The rubber on mine has too much suction; and unless care is used when the wax is drawn in, some may run up into the rubber. When this is done the hot wax does not, as one might think would be the case, injure the rubber, for, after the wax is removed, it works as well as ever. But if care is used, or with a bulb the right size, no wax will be drawn into it.

In this connection I will describe a plan I have practiced somewhat to prevent full sheets in unwired frames from sagging. This sagging or stretching of the foundation, as those who have had trouble in this respect know, is next to the top-bar, a strip two or three inches wide. After foundation has been fastened in a frame, and while it still remains in position on the board, the point of this wax-dropper is held close up to the foundation, two or three inches above the top-bar; then a small stream of wax is forced out. As the point is lowered to the top-bar, this adheres to the foundation; and if the operation is repeated at intervals the whole length of the top-bar, it will prevent the foundation stretching when the bees first get on it; and by the time they do, these strips of wax off the foundation are usually drawn out enough to hold it from sagging.

This wax-dropper is also very handy in fastening pieces of comb in sections, and in patching up combs by cutting out patches of drone comb, and replacing with pieces of worker comb or foundation. But a board such as I have described is essential when fastening full sheets in brood or full-depth frames.

In reading this over I see that I forgot to say that, if the wax is heated to only about the melting point, when commencing to use the dropper it may, unless one works fast, harden and adhere to the sides of the tube, or even clog it up. In this case, or if for any reason work is suspended, and the wax is left in the tube until it hardens, all that is necessary is to hold the tube in the melted wax an instant, then what is in the tube melts and can be allowed to run out; but with the wax hot enough there will not, unless wax is left in the tube, be any trouble in this respect. I explain this matter in detail because, if one tried a dropper of this kind with the wax at only the melting-point, some might consider it a failure. After the wax is heated quite hot it remains liquid in the tube much longer than is necessary.

Southern Minnesota.

[Your device is nothing more nor less, if I understand you, than a large-sized medicine-dropper, or what druggists call a pipette. A device quite similar has been illustrated in our columns, without the rubber bulb. It was simply a tin tube $\frac{1}{2}$ or $\frac{3}{4}$ of an inch in diameter, tapered at the point to a small hole. This was partially submerged in hot wax, and allowed to fill. It was next removed, and the point was then drawn along the edge of the foundation, gravity forcing the wax out in a fine stream, said stream forming a bond of union, when cold, between the foundation and the top-bar. But one difficulty with this device was that it fed the wax too fast, and at other times not fast enough. This rubber bulb would overcome this difficulty, giving a perfectly regular feed and stopping it at the moment desired. These bulbs can be purchased, probably, at the drugstores; at any event, they can be obtained of any of the large rubber concerns; for example, the Hartford Rubber Works, Hartford, Ct.; the Goodrich Rubber Co., Akron, O.; the Diamond Rubber Co., Akron, O. After getting the bulb, make the tin tube, or get your tinner to do it for you. To overcome the difficulty of the wax being drawn up into the bulb spoken of by Mr. Davenport, make the tube a half longer, and then always hold the bulb "this side up with care," or bulb upward.—ED.]

SHALL WE WORK FOR COMB HONEY OR EXTRACTED, OR BOTH?

BY WM. A. SELSER.

The paper written a few weeks ago by our good old friends in New York city has no doubt been read very carefully by a large number of honey-producers. The writer having had a large experience in the Eastern markets,

feels that there are some exceptions that should be taken to this article. It reminds me very much of one ascending Pike's Peak, in Colorado. After ascending two-thirds of the way up to the peak, one looks across a beautiful stretch of country, and certain impressions are formed; but on reaching the top, and getting that grand extended view for many, many miles, quite a different impression is formed. In looking over the city of New York in reference to the honey-producing capacity, our friend's conclusions are correct, and especially so with regard to the buckwheat honey, of which Northeastern Pennsylvania and New York produce over half of the United States supply. The reason why extracted buckwheat honey is not profitable to produce any more in the Eastern markets is because, first, the biscuit trust can buy a better grade of honey, for the same price, than buckwheat has always been sold for in the past. Second, two years ago a patent discovery was made by which large producers in New York city can turn out an adulterated article by the carload, and make it sugar in four days after it is manufactured, which looks and tastes exactly like the genuine buckwheat honey, and can be told only by chemical analysis. Therefore, it follows that buckwheat comb honey is the only way that buckwheat honey will sell at all, unless at very low figures.

Now, then, ascending the mountain a little bit higher, on looking over the vast area of the United States in reference to its honey production in relation to comb and extracted honey, we advise the bee-men to go on just as they have. About four years ago this summer, Wisconsin had hard trouble to dispose of its crop of comb honey at 8 cts. a pound, and it was very pretty at that. Since Colorado, Utah, Arizona, and other new places have come to the front in producing alfalfa comb honey, there has always been sufficient comb honey to go around. With all the human cry last fall of a short crop, the writer knows of two cars, one sent to Philadelphia and the other sent to New York, that could not find buyers, and had to be stored for future offerings.

One reason that comb honey has been scarce with the dealers is because they were not willing to pay the price. This year, with the prospect of an immense crop from California, and these new places heretofore mentioned, that seldom fail with an average crop, the prospect is that comb honey will be a drug on the market; and the bee-man should remember that comb honey, if not sold before the following season, is not worth very much. The average price for which California comb honey has sold on the Philadelphia market with a good yield, has been 7 and 8 cts., a comb running a little short of a pound. Now, then, how should bee-keepers fare who have always been able to get on the average 7 cts. per lb. for fancy white-clover extracted honey, and some years even more, if they turned around and changed their hives to produce comb honey, and we should have a big season, and they could not sell it at an average price of 10 cts., and would have to carry it over,

and probably realize about 4 cts. per lb. for it? I would say in conclusion to our fellow honey-producers, do as I propose to do—raise comb or extracted honey in proportion as they have in the past years, and not be carried away with the high price comb honey would bring one year in ten.

Jenkintown, Pa.

RAMBLE NO. 187.

An Experience with the Ferris Wax-extractor.

BY RAMBLER.

"Good morning, Mr. McCubbin; glad you came around. I've just been over all of our colonies of bees, and cleaned house, as I call it. There was an everlasting amount of brace-combs and bits of comb at the ends of the frames. Why, it seems to me there was a pound of wax daubed around in useless places inside those hives."

"And, Rambler, you have got all these boxes full—had no idea there was so much. I suppose you will now render it out."

"Well, no; not just yet. I think I will wait until I can use the sun extractor. I notice an April sun is not a good wax-worker."

"But, Rambler, why not use my Ferris wax-extractor? You know there is one in the back room."

"Yes, yes. I have noticed your old Ferris concern; but, I'll tell you right now I wouldn't give a row of pins for it."

"You wouldn't, hey? Say, Rambler, did you ever use one?"

"No, and I don't want to. Why, I have used no end of these steam wax-extractors. If a man has just one swarm of bees and a milk-pan full of combs it might be of use, for the women-folks could put it on the stove and then it would take all day to render it."

"Well, Rambler, you have a great amount of prejudice. I don't see that this Ferris extractor is any slower than any other way of boiling in water. Then you must know that mine is the first one sent to California."

"Is that so, Mr. McCubbin? Ha, ha! Well, it ought to be the last one. No, sir; you can't fool me on these steam wax-extractors; besides, I have a brand-new way for rendering wax, that will just paralyze Ferris and his extractor. I don't mind if I reveal the plan to you. You know when we boil all this stuff in an open boiler, the refuse, instead of staying at the bottom, where it ought to, comes to the top, and wax and refuse have a remarkable affinity for each other; and, even in your much-vaunted steam-extractor, much wax goes into the slumgum. Now, my plan is to put all of that refuse into the bottom of the boiler, leaving nothing but wax on top. The boiling water will eliminate every particle of wax from the refuse, and there is absolutely no waste."

"Well, Rambler, that is a very pretty theory; but did you ever make it work?"

"No, but I am just ready to. The plan is very simple. I place a roller, or, rather, a large tin spool, in the bottom of the boiler. I

attach to this a long strip of cheese-cloth with pockets across it. Now actuate the roller; the breadth of cheese-cloth rolls down, the pockets have the openings downward, and gather in all the slumgum, and the latter is all wound up on the roller under the water. You see it strains and compresses it all at once. Remove the clear wax, and then the roller with its load of refuse can be removed. You see it can be put into a common wash-boiler, and need cost not over one dollar. Oh! I'll show you and Ferris which shank of a razor-back hog has the most fat on't."

"Well, Rambler, your plan looks reasonable. Go ahead with it, and success to you; but I must be going. I have a thousand acres of land to sell this week. I'll be around again in a few days. So long."

A week later.—"Hello, Rambler! Well, I'm around again; how is that razor?"

"So I observe, Mr. McCubbin. Did you sell that thousand acres of real estate?"

"I did not; but, see here. I am interested in wax-extractors just now. How did your new-fangled roller-me-jig work?"

"Sit down here, Mr. McCubbin, and I will unfold to you a story of bright hopes, of disappointment, and of conversion. Well, sir, I tried that roller-up plan, and somehow the pressure was not strong enough to eliminate all of the wax, and it appeared in little granules all through the mass. It is possible that the thing might work after a few improvements to increase the pressure; but I have not the tools for making the thing as I want it. I therefore fell to considering your charge of prejudice; and if I had any I cast it aside and resolved to try the Ferris extractor. I set it going properly on the stove, got a *McClure's Magazine* and the *Examiner* to help while away the time, for I expected a whole day's job at rendering a sack of old combs and scrapings. Just as I had gotten the fire to going nicely Mr. Wescott came along and we talked a while about his mowing the alfalfa near the apiary. I started back to the stove, and was a little surprised to see something trickling from the spout of the extractor. 'Nothing but water,' said I; but a closer view revealed quite a little wax with it, and it was running on to the floor. Well, I hustled around to get a dish, and by that time quite a respectable stream was running. Then I had a curiosity to see the inside of the extractor. The removal of the cover let into my face a great rush of steam, and I was really surprised to find the baskets nearly empty. I filled them again, and crowded down some hard lumps; and, though I had to poke my nose into the extractor several times just to see how it was working, those lumps melted away in a perfectly satisfactory manner. I looked at the big letters 'FERRIS' stamped on the front of the machine, and gracefully took off my hat to Mr. Ferris, inventor of the first satisfactory steam wax-extractor. I soon had occasion to melt and recake quite an amount of wax, and I put in some quite large chunks just to clog it if possible; but it was no use; it seemed as if something was 'chawing' it down at the bottom. Yes, sir; I will indorse

the Ferris; and his later machines, with the pressure principle, must be near perfection."

"Well, Rambler, I am pleased to know that you are liberal enough to throw aside your prejudice and indorse a good thing when you try it. But, see here—what are those wooden boxes for?"

"Those are for molding wax. The usual plan, you know, is to mold in an old five-gallon can; but such vessels are as small at the top as at the bottom, and often the can has to suffer before the cake of wax can be removed. Now, my idea of the matter is that every well-regulated apiarist should have three or four square tin dishes made with the tops about an inch larger than the bottoms, and large enough to hold 20 or 25 lbs. of wax. Not having such vessels, and not having even old rusty tin cans, I made these wooden boxes. They hold 20 lbs. of wax; and I want to know, Mr. McCubbin, if you can make a wooden box, that will hold water or melted wax, with a saw and hammer."

"Well, no, Rambler. I am not much of a mechanic. I think you must have some kink about the way you do it. Or, say—I might possibly make such a box if you will allow me to nail it up with a harrow-tooth."

"Well, I can tell you how to do the same trick, harrow-tooth or not. Get your boards the proper size for the box you want. These three boxes are made of $\frac{3}{8}$ -inch boards, 12 inches square at the top, 9 inches deep, and $\frac{1}{2}$ inch smaller at the bottom. When you get the pieces of boards ready to nail up, put some beeswax into a shallow tin dish—an old baken-tin will do. Next get some strips of heavy woolen cloth; cut them from an old pair of pants, before nailing up the sides of the box. Cut the woolen strips one inch wide, and a little longer than the depth of the box. Let your wax get boiling hot; thoroughly saturate a strip of cloth, and quickly lay it on the joint to be nailed, and quickly nail the other piece right down upon it. So continue for all four corners; then put the bottom on in the same way. Those strips of cloth saturated with boiling wax, nailed firmly into every joint, fill up all of the pores and inequalities; and if the boards have been gotten out with reasonable care your box will not leak. But, to be doubly sure, after the box is nailed up and the edges all trimmed down smooth, another set of waxed cloths can be nailed down with cleats over the cracks."

"That seems to be a nice way to do it, Rambler; and your cakes of wax all look so nice and yellow; free from those discolorations that are sure to come from old tin dishes. But does not the wax stick to the wood?"

"It did not in the case of these 12 cakes; but I had to exercise some care toward the last caking. No, wood is not so good as tin; but this way to make boxes is worth knowing. You can make a nice tray for developing photographs, by this method; or by lining the tray with a piece of flannel saturated in beeswax; or you can make a very good and serviceable bachelor's wash-tub. Here is a photo of our waxworks for the season. The Ferris has the post of honor in the center. In front

of it is an old five-gallon can that has seen rough usage in the removal of a cake of wax. The 12 cakes of wax run about 20 lbs. each. The molding-boxes are, one on top of the extractor, the others at the ends; the one at the left shows the doubly sure box with the extra cleats. Then this wax was all strained through that endless strainer hanging in the center."

"You are all right on the wax question, Rambler; but here is one small cake that is darker than the rest, and it has a peculiar odor."

"I can account for that only from the fact that, in caking a quantity of wax, I shave off the bottom of the cake clear down to the yellow wax; and, by the way, a drawshave is the best tool for that purpose. Next to a drawshave give me a hatchet. When we take all of these shaved portions, and cake them, it is darker than the rest. I believe there is a goodly amount of bee-glue in it. I 'dunno'—do you?"

"Dunno me too, Rambler. Well, I must be off. Real estate is on the boom. I've just



RAMBLER'S WAXWORKS.

bought a choice eighty myself. I will put it all out to alfalfa—several thousand acres more just as good for sale."

"Why, Bro McCubbin, you will be as bad as the old woman, and sail yourself one of these days. You see, this woman put up a notice on her house, 'This place for sail.' A wag saw the notice, and immediately sought the woman, and, said he, 'Ma'am, when does this place sail?' 'It will sail, sir,' said she, 'just as soon as the person comes along who can raise the wind.'"

"Well, Rambler, that's where we must know the difference between sail and sale. But I am like the old woman—ready to sail either way. All that is necessary is the raising of the wind. But I must be off. Get up, pony. So long."

"So long."

Since writing the foregoing, GLEANINGS for April 1st has arrived, wherein the steam and press methods are quite thoroughly presented. From my experience I think better results are attained by pressure under boiling water. Parties in this State have, during the

past three dry seasons, made a business of purchasing old combs, and even old slumgum, and have made a good thing from the wax rendered. They used some sort of press under water, and the refuse is put under such pressure that it comes out as hard as a brick, and every particle of wax out of it.

It would be impossible to apply such pressure in the Ferris extractor; but I believe that the pressure, such as it is, should be applied under water. The Ferris should have some sort of faucet on the outlet to enable the can to be partly filled with water. But I am judging much from the old two-basket extractor here, and have no doubt the present improved extractor is the best all-round machine on the market.

COMB 40 YEARS OLD.

BY GEORGE W. ADAMS.

I was much interested in the article on p. 332, 333, on the size of bees from old combs.

One of the best colonies for work I ever saw was put into a hive made by a neighbor, between 1850 and 1853, the swarm being hived the same year. This is not "tradition;" but I think that, with a little trouble, the month and year can be definitely fixed. For over 40 years this colony did good work; but two years ago, the old hive having become badly decayed, they were transferred. I did not hear of it in time to be present, but made careful inquiries, and learned that the comb "was very black," and had very few drone-cells, the owner describing the drone comb as "a patch about as big as my hand only." The old comb was carefully preserved, and

I will send you some if you like.

The owner is one of our leading citizens, a man of intelligence, and a close observer and keen reasoner. He is very decided in his opinion that the bees grew no smaller, and now has most of the comb in the new hive. He certainly would not have used it if he had any idea the bees were growing smaller.

I don't believe you will find much older comb where the age can be definitely proved, and this can certainly be done.

South Byfield, Mass., April 25.

[If those are correct who claim that the cells fill up with cocoons, and become so small that the comb ought to be renewed in five, four, or three years, and that it is easy to recognize the smaller size of bees reared in comb ten years old, then bees raised in this forty-year-old comb ought to be pygmies indeed. But they were not perceptibly smaller, and the colony was one of the best. Incidentally it might be observed that the good reputation of the colony was to some extent due to the fact that very little drone comb was present.—ED.]

AN OBJECT-LESSON IN BEES AND GRAPES.

BY J. B. HAINS.

I send a photograph of grapes, part of them punctured and part of them sound, which I placed in the upper story of hives, together with other fruits—peaches, pears, etc.—last summer, by request and co-operation of C. A. Ennis, justice of the peace, and ex-mayor of Bedford. We examined them from time to time as long as they would keep without rotting, and found all that we punctured entirely consumed except stems and skins; while every specimen not punctured was untouched. We placed them in a portico outside the hive, and in a few minutes we discovered yellow-jackets on them. Then we removed them to the inside of the hive to protect them from wild bees, and possibly from birds, which we believed to be the really guilty parties.

Bedford, O.

es they *guess* they make the holes, when we have shown over and over again that bees do not make the holes unless the skin is affected by rotten spots at first invisible to the naked eye.

I wish to call particular attention to the fact that there seems to be *one* large puncture in each grape of the shriveled specimen, and only one. In one or two specimens it will be seen the large hole is made larger by the constant twisting, squirming, and struggling of the bees. In the name of common sense, if bees can do their own puncturing why does not each bee make a hole for itself? But, no; you will see them all struggling at one hole—a hole that has been made previously by some other insect, or, as in this case, by man.

We shall have some of these struck off so that our friends who are met by the statement that bees puncture fruit will be in a position to give ocular proof that they do not; for, as



GRAPES HAND-PUNCTURED, AND AFTERWARD SUCKED DRY BY BEES.

[This is the old, old story. But here is a very good photo, and photos do not lie, showing that sound fruit, when placed right in among the bees, will not be molested, while that which has been punctured by outside agencies they will suck dry; and yet there are some, even among bee-keepers, who insist that bees do puncture peaches. They admit that they have never seen them do it; but from the fact they see them working on the peach-

I understand it, the sound specimens shown in the picture were put right among the bees and left there, with the result that they were untouched. Those that were punctured in the first place, and that had been subsequently sucked dry by the bees, would have been of no value, and therefore no financial loss would have been sustained. It is sound fruit in every case that is of value, and this the bees do not pretend to molest.—ED.]



HOW SWARMING IS CONDUCTED.

"Here I am, down again to bother you with some more questions."

"Well, what is it this morning, Mr. Brown?"

"You will remember that, when I left you the other day, I went in a hurry because the blowing of the horn told me my bees were swarming."

"Yes, I know you got off about as lively as any fellow I ever saw, except one who has some bees in his hair. You left me without even saying why you were going."

"Well, after I had hived that swarm an old farmer bee-keeper came along and told me that, as only old bees went with the swarm, it was always best to give each swarm a frame of hatching brood on hiving them, so they could have young bees coming on as the old ones died off. Then he told me other strange things, among which was that the young queen emerged from her cell within 24 hours after the swarm left, so the young bees, left behind, would have some one to rule over them before they got wild."

"Did you believe him?"

"Well, hardly; but as I could not answer him to my satisfaction I thought I would run down a little while this morning and see what you thought in the matter."

"Up to within a few years I allowed natural swarms to issue as a means of increase, and have experimented largely during thirty years to know under what conditions swarms issue, as a rule, and have found, as regard to age of bees, that bees of all ages, in about equal proportion, leave the parent hive, from the old forager to the bee that has been out of its cell but a few hours."

"How do you know a bee which is an 'old forager' as you call the old bees?"

"They are very easily told by their lack of hair, darkness of color, and their jagged wings. Did you never look close enough to discover such in your hives?"

"Yes, I have often seen such bees with torn and tattered wings, and have often seen them with the swarm, but I had supposed that something had happened to them."

"There undoubtedly had, but nothing only what is the rule with old field bees during June and July. Very much of our white clover grows with other grasses; and in searching for the honey the bees hit their wings more or less against this other grass, so that, soon after beginning gathering clover honey, the wings of the older bees begin to be torn; for, the older the bee the more easily torn are the wings—very much on the principle that it takes a much less blow to bruise or break the skin on an old person's hands than it did while that person was in youth."

"I see; but how tell the young bees?"

"They are more easily told than the old

ones. Young bees, when they first emerge from their cells, are light-colored, from their being all covered with fine hairs, or down, which wears off and changes color as they grow older. Many and many times have I seen the ground in front of the hive nearly covered with bees so young as to be unable to fly, after the last of the swarm had got in the air, looking so white and feeble that a feeling of sympathy would come over me, and I would try to gather them up and put them back in the hive; but a little watching soon told me that they would all get back themselves, if a proper alighting-board were used so that they could travel back on foot."

"Since you speak of it, it reminds me that I have seen the ground covered with bees in the same way; but I thought that such bees had loaded with honey so heavily that they were unable to carry their load."

"If you had looked more closely you would have noted that they were not loaded nearly so heavily as multitudes with the clustered swarm. I am very sure that bees of all ages go with the swarm, so that each swarm is composed of field bees, wax-workers, and nurse bees, in about equal proportions, this showing that the allwise Creator knew how things should be when he pronounced good all which he had made."

"Then you think that a prime swarm needs no frame of brood to give them young bees?"

"Of course, the young bees from a frame of brood would materially strengthen the swarm; but such strengthening is not necessary; for, had it been, the swarms of our fathers would have perished—yea, and those since the foundation of the world, for no one ever thought of giving brood to prime swarms before the latter half of the last century."

"I guess you are right."

"Well, if you are satisfied on this part, let us suppose we are looking inside of a hive when preparations for swarming are being made, and see if we can not arrive at the truth in the matter as regards the conditions under which swarms issue, when the first queen hatches, etc."

"Can you tell any thing about such things?"

"Certainly; and so can you, if you study these matters. The first indication of swarming is the laying of eggs in the drone-cells. While eggs in drone-cells are not a sure sign that swarms will issue, yet, so far as I have observed, swarms never do issue without eggs laid therein. If the weather is propitious, the next step is the building of queen-cells, soon after which the queen deposits eggs in them. In about three days these eggs hatch into larvae, and said larvae are fed an abundance of food by the nurse-bees for about six days, when the cells containing the embryo queens are sealed over. If no bad weather has intervened, the swarm issues the next day, the old queen going with the swarm."

"Is this always the case?"

"Not always. But this is the rule with the black (or German) bee, and generally with the Italians; still, the Italians often swarm when the eggs are first laid in the queen-cells,

and sometimes without the least preparation at all except for drones, although this last is something very rare indeed."

"You spoke of the swarm issuing on the sealing of the first queen-cell. Surely she could not emerge from the cell 24 hours later, as the bee-keeper told me, could she?"

"All good authorities say that the queen larva remains seven days in the cell, as my experience also proves, and I can not conceive how any could make a mistake of six days, unless the swarm was held back by bad weather for six days from the time the cell was sealed. Should it be possible that any swarm was thus held back, then there might be such a thing as a young queen emerging from her cell 24 hours after the first or prime swarm issued."

"That seems plain."

"Yes. And that you may understand a little further I will say that I have found, as a rule, that the first queen emerges from her cell from six to seven days after the first swarm. If more swarms issue they usually come out two days after, or from the eighth to the tenth day after the first, and never later than the sixteenth day. As soon as the bees decide that no more swarms shall issue, all queens in their cells are destroyed, when in from five to nine days the reigning young queen goes out to meet the drones—two days after which, she commences to lay."

"I think I understand natural swarming much better than ever before, and I'll be going, as I see you are very busy."



STRAINING EXTRACTED HONEY; FOX'S METHOD.

Friend Root—In reply to your request, p. 240, relative to clarifying honey, I beg to say I am not one of the *large* producers, but will compare my honey with the *largest* or the *best*, and, if agreeable, will give my method of straining and clarifying.

I have six large barrels holding about 600 lbs. each, arranged around my extracting-room on a strong bench, with heads out, and molasses-gates near the bottom. Each barrel is supplied with a *fine* cheese-cloth strainer tied securely over the head. I draw the honey from the extractor into an ordinary water-pail and transmit to these barrels through the strainers. This takes out the minutest specks. It is left in these barrels from one to six weeks according to the time in the season of extracting), when it is drawn off into 60-lb. cans, caps screwed down *tight*, and placed in cases, and securely nailed, ready for shipment. I have practiced this method for the past 18 years, and have never had a *word* of fault found.

A while ago I noticed quite a little in GLEANINGS relative to drones produced by virgin queens and fertile workers. Of course,

all bee-keepers know this to be a fact; but does any one know that such drones are fertile? I have never seen a word in print in regard to it. I am of the opinion that they are no nearer perfect than their mothers.

Hillsboro, Wis., Mar. 25. ELIAS FOX.

[I had the pleasure of meeting Mr. Fox at the last Wisconsin convention. For one who has been so extensively engaged in the business, and who knows so much about bees, he is very modest concerning himself. His method of straining his honey, and allowing it to settle, is not only simple but very effective, if I may judge from the reputation of the Fox honey. Your question in regard to drones is considered on the last page of our little book, the Dzierzon Theory. Since that book was written, others as well as Dzierzon have decided that such drones are virile males.—A. I. R.]

OLD COMBS FOR BROOD-REARING.

I think that, while W. T. Stephenson is sincere in his remarks, careful investigation will show him wherein he errs.

The idea that the cells get too small to raise full-sized bees is as absurd as it is erroneous. I can trace some of the combs in my yard, and in my best colonies, that are over 20 years old, and I do not know how much older. Are those bees any smaller than the other stock? No.

Now, I think there is one fact about bees that neither you nor Mr. Stephenson has observed. Bees, like all other creatures, change their physical condition and get "fat" and "poor" (thin) according to food conditions, and this fattening process does not necessarily enlarge the thorax. In going through my apiary when honey has not been gathered for a month I have often been struck with the thought, "Are my bees degenerating?" they seeming smaller in appearance than usual; but after a week's run of honey I am struck with the thought, "What fine, large, sleek-looking bees they are!"

I think friend Stephenson's bees, when they appeared larger, were working better than when he thought them undersized.

Baptisttown, N. J.

W. W. CASE.

[I had not thought of the fact that there are times when bees appear very much smaller than at others; but repeatedly have I noticed that when bees were put into a mailing-cage they look large and beautiful; yet when those same bees have been confined for four or five days, or a week, they would look small and insignificant.

No, I can not believe that Nature has made such an egregious blunder (indeed, she does not make such blunders) that, in the process of time, the bee-cradles will become so small as to dwarf the size of the infants during their period of growth under the coverlet—the capping. I shall be much obliged if you will send me one or two samples of comb which you know to be at least 20 years old. These I shall be pleased to examine closely; and in the mean time I hope you will conduct this experiment: Put one of those 20-year-old combs in a brood-nest, and alongside of it

another comb one year old. Allow each to remain in the brood-nest until they have capped brood almost ready to hatch. At this time put each in a wire-cloth cage in the upper story of a strong colony, shutting out all the bees at the time of caging the combs. Now wait for the bees to hatch out. Keep the bees confined in those combs, and then ask an unprejudiced bee-keeper, who does not know any thing about the controversy, to give his opinion as to which bees are larger, if any. Let us put this matter clear beyond the possibility of guesswork or prejudice. After you have called the attention of various persons to the matter, send samples of each lot of bees in a mailing-cage to me, and at the time of sending these bees mail a card referring me to this issue and this page. We have micrometers with which we can measure to the ten-thousandth part of an inch. I will ask one of our men, who does not know any thing about this controversy, to measure the bees and see if he can detect any difference in the size of the thorax, or waist. I should be pleased to have any others who have any combs that they know to be 15 or 20 years old make similar experiments, and then send the bees on to me for measurement. At the time of sending the cages number them, but do not tell which bees are which. If I have any prejudice at all (and I think I have not) I wish to be in position to give the facts just as they are.—Ed.]

TAKING ADVANTAGE OF THE SITUATION TO MAKE SALES.

A certain portion of J. C. Wallenmeyer's article on page 189 is open to criticism. If Mr. W. means his advice for just this season only, it does very well for those who actually have a short crop; but one would naturally suppose he meant it for all seasons and all places. You will notice Mr. W. says, "Tell the would-be buyer that the crop is very short, and that you would not have much to sell." I wish to say to Mr. W. that you can't catch birds with chaff. I have been a commercial traveler some six or eight years, and let me tell the bee-keepers the best way is never to misrepresent in order to make a sale. If Mr. W. would tell his customers his crop was short when, in fact, it was not the truth, he is not worthy the name of bee-keeper, saying nothing about being a salesman.

AARON SNYDER.

Kingston, N. Y., Mar. 7.

[Mr. Wallenmeyer says:]

The above criticism certainly displays Mr. Snyder's wonderful ability as a sophist in thus construing (or misconstruing rather) such a plain statement as the one referred to. The readers of GLEANINGS can rest assured that the editor would never allow any article containing even the slightest fabrication to enter its columns. In proof whereof I will state I was asked, in 1895, by the editor to submit an article on making and selling honey lemonade at fairs. The same was rejected because I advocated the use of "large, heavy, 10-oz. thick-bottom glasses." Mr. Snyder has simply set up a "man of straw" and administered

"knock-out drops." Is there not a short crop in every State in the Union (except two) *this year*? Is not the article written for the present time? and does any one suppose it would stiffen prices, or increase the tendency to buy, if you inform the "would-be buyer" you have 5 tons of honey? If I have a large crop I keep mum; if a small crop, I use that information to advantage.

J. C. WALLENMEYER.

Evansville, Ind., Mar. 20.

[I think Mr. Snyder, in view of Mr. Wallenmeyer's statement, will be very ready to acquit Mr. W. of any misrepresentation. Certainly we have a right, when the crop is short, to make as much of a handle of the fact as possible, and a bee-keeper would be a fool if he didn't. When there has been a short crop the price *ought* to be higher, and the only way to get it higher is to impress on the consuming public that what little there is must be sold at an advanced price.—Ed.]

SWARMING WITH DEEP FRAMES.

My experience with the Jumbo hive last season was exactly the same as Dr. C. C. Miller's. My first swarm came from one of those hives. I have two of these hives I made myself. The only difference is, I made them eight frame instead of ten. Neither of them gave me any surplus. I experimented with two Dovetailed hives, one on top of the other, last season, with good results, one of them giving me 66 lbs. of comb honey.

Mineral Springs, O. J. L. ELDRIDGE.

Evidently it is not an easy matter to draw definite conclusions where results seem so contradictory. Possibly, advocates of large hives might say something like this: "Your eight frames with increased depth still left your hive quite too small to prevent swarming; for your hive was only about the same size as a ten-frame hive with the regular Langstroth frame. If you have a hive small enough, it will be difficult to get the colony strong enough to swarm; and this hive, being a little larger than the other eight-frame hives, allowed a stronger colony to winter in it, thus being sooner ready to swarm. If you want a hive large enough to prevent swarming it must be still larger."

If two stories did better than one, it is hard to see any reason why a hive having a capacity between the two would not be better than the one-story hive.—Ed.]

A REMEDY FOR FERTILE WORKERS.

Last spring I found one colony queenless, and with one or more laying workers. I read all I could find on the subject, hunted for the pests, gave the colony frames of brood, young larvae, and eggs, from other colonies, and also those containing queen-cells, but got only drones, drones, drones.

On June 19th I found an after-swarm buncheted on a tree, and, not knowing where they came from, I removed the cover from the queenless colony's hive, turned up one corner of the quilt, exposing space between frames about equal to a hive-entrance, placed an

empty hive - body (without frames) on top thereof, and shook the after-swarm therein. Result—in two days the bees were all in the queenless hive—no fighting—removed empty body, and put on super. Later I took off 20 lbs. of surplus, and put a good colony away for wintering.

W. H. REED.

Canton, Minn., March 28.

[Shaking large bunches of bees from a strong colony into a hive of fertile workers would have practically the same effect. This can be done at any time here.—ED.]

BEES AND GRAPES.

In your footnote on the above caption in Beginners' Questions, page 244, March 15, you offer the clearest and strongest evidence in exoneration of bees that I have ever seen. Let me quote: "Now, to convince yourself that bees do not make fresh incisions, I would call attention to the fact that three or four, yes, five or six, will be circling around one hole, sometimes standing on top of each other, all running their tongues down into the same hole. If they could make fresh incisions they would not crowd and jostle each other as they do; but each bee would make for itself a hole where it could work without being hampered in its efforts to extract the juices."

If any "candid man" will take pains to observe the operation to which you call attention he will surely be convinced that the bees are not guilty of puncturing grapes. The trouble is, people are so apt to jump at conclusions without sufficient (or any) investigation.

Birds, nearly all kinds, but especially English sparrows (and are they not found everywhere?) are the guilty parties. With us, catbirds and robins do a good deal of mischief, but they give us in return some very sweet music, while the English sparrow has no redeeming qualities at all. Better devote them to destruction, and protect the innocent bees.

JOHN T. SILER.

Berkeley Springs, W. Va.

OUR PREMIUM QUEENS, HUSTLERS.

Mr. Root:—You will remember my telling you last summer that one of my premium queens was superseded. The young queen proves to be an exact duplicate of her mother. I was looking the hive over to-day, and found brood in every one of the eight frames, every available cell being occupied, and without any spreading of brood, and plenty of bees to begin business in an upper story, which I added. I would not take five dollars for her to-day. She and her bees are "hustlers." They are all three-banded, yet slightly on the leather-color order.

ELIAS FOX.

Hillsboro, Wis., May 4.

THE ECONOMY IN THE USE OF A WAX-PRESS.

Your articles and illustration on the Hatch-Gemmill press, I think, are the best that have ever appeared in your journal. Six

years ago I rendered 100 lbs. of clean wax from 300 old and promiscuous combs. I pressed the wax out on a cider-press. Shortly afterward the question was asked in GLEANINGS, "How many Langstroth combs does it take to make 1 lb. of wax?" As nearly as I can remember, your correspondents made 1 lb. of wax from five to eight combs. I then was satisfied that they did not press their refuse, or made a very bungling job of it. I think the Hatch-Gemmill press is altogether the best and cheapest apparatus made for securing the largest quantity of clear beeswax.

West Bend, Wis.

H. P. AHLERS.

PROPORTION OF WAX OUT OF OLD COMBS.

From 15 lbs. of comb out of box hives I made 8 lbs. of wax; and from 8½ lbs. of refuse (out of which a neighbor had taken all the wax he could get) I secured 1¾ lbs. of beeswax. If the editor would like to see samples of wax and refuse I will send them to him free by mail. I do not know how old the combs in box hives were. The man who brought the combs to me got them when his father died in 1897, and his father kept bees for many years. I have been in the bee business nearly ten years, and I haven't any combs as heavy and black with cocoons as those were.

St. Anns, Ont.

HERBERT TREAS.

[You do not say how you rendered this wax; but I would assume that you used a press of some kind.—ED.]

UNITING BEES WITH PEPPERMINT.

Old bee-keepers will smile, I dare say, when they read how I unite two colonies. I just remove the cover from each hive, pour in a few drops of peppermint essence, cover up for 15 minutes, then remove the cover from the one I want vacated, and set the other on top; then I find them all in the upper hive in two or three days, and no dead bees.

Davenport, N. Y.

E. E. STEBBINS.

[But if I am correct old bee-keepers seldom have trouble in uniting, even without the peppermint. If there is any trouble, or liable to be, smoke will answer as well.—ED.]



C. W. C., Iowa.—Glucose is a very poor food for bees, and it is very seldom they will take it. It would be better and cheaper for you to give them sugar syrup, as described on page 28 of our catalog. There is more nutrient in syrup made from granulated sugar, for the money, than any glucose made, no matter what the price may be.

C. C., N. Y.—You ask how you can tell whether your box-hive colony is queenless; and, unless you are a pretty expert bee-keep-

er, you can not tell; but you could do this: Turn the hive upside down, and then smoke down between the combs. If you can not see any capped brood, then the colony is possibly queenless. The better way would be to transfer this colony into a modern hive with movable frames. For particulars see our A B C of Bee Culture.

R. C., Mich.—In reply to yours of April 29 I would state that, in my opinion, you did not have foul brood, especially if the dead larvæ were white. This would likely be a case of chilled or overheated brood, or possibly poisoning. I should hardly suppose that the onion pollen would be detrimental; if so, it would be the first case of which we have ever heard. Bees have been kept within the vicinity of onion-farms for many years, without any bad effect.

A. J. B., Texas.—I do not quite understand your question; but if you mean that the bees cluster out too much in front of your hives, and you desire to get them to work, we would advise you to see that such hives are properly shaded, and that they be also given a good wide entrance—one inch deep at least, by the full width of the hive. It is sometimes a good practice to lift the hive clear off from the bottom-board, and put between the four corners of the hive and bottom-board a block $\frac{1}{8}$ inch thick, thus raising the hive $\frac{1}{8}$ inch higher on the bottom-board than it was before. This would make the hive cooler, so the bees will go in.

G. W., Fla.—Bee-paralysis is a disease that is very hard to cure. I would advise you to take all colonies that are thus affected and move them at least a mile and a half from the healthy bees. Remove the queen from each of the affected colonies, and give them a virgin from some healthy stock. If you have the bees to spare, and have only two or three diseased colonies, unite a healthy stock with every diseased one. The healthy bees will carry off the dead and dying, and in time may possibly effect a cure. But bee-paralysis is a very stubborn disease, and you should by all means get the affected bees away. For further particulars, see Diseases of Bees, in the A B C of Bee Culture.

W. T. G., Ohio.—To kill ants we do not mix any thing in molasses, as whatever is poisonous to the ant would be poisonous, also, to the bees. The method of destroying ants, recommended in GLEANINGS, is this: Find the nest, and, with a crowbar, make a hole right through the center of the hill, about a foot deep. Pour into this a teaspoonful of bisulphide of carbon, and then stop the hole with a plug of earth or sod. It is the gas permeating the galleries of the nest, that does the destructive work. This chemical you can get at the drugstore. A ten-cent bottleful will destroy a dozen ant-holes. If you can not get the bisulphide of carbon, use gasoline or coal oil; but in that case use a larger quantity, perhaps a gill; but the bisulphide of carbon is the best, for it destroys the ants, eggs, and every inmate of the nest. Be careful in handling this drug, and do not get it near the

fire, as it is very explosive. It should not be stored in a building where there is likely to be a lighted lamp.

ON THE USE OF VEILS IN THE APIARY.

R. C. M., Fla.—It is evident that you do not understand the position of ourselves and Dr. Miller. The writer very seldom puts on a veil when he goes out among the bees. There are only a very few of our colonies that will offer an attack; but in the production of comb and extracted honey, a great many bee-keepers believe that a cross between the blacks and Italians is superior. Such bees are much crosser than the pure yellow stocks direct from Italy. It is always better, in such cases, to wear a veil, as one can work more rapidly, and with more comfort. But any one of these bee-keepers may work among the bees without smoke and without veil, and for hours and for days, sometimes, at a time; and when bees are working strong in the fields it is sometimes a common practice to lift the veil up, and pull it down only when an obstreperous colony is encountered.

P. T., Iowa.—1. I can not explain why bees sometimes die in the hives, leaving plenty of good stores. As a general thing we may say the cause is too much cold or lack of protection. Sometimes a colony will eat all the food around it, or around the cluster, rather; and, if the weather continues cold, they are not able to move the cluster over to the food, and, as a consequence, starve to death.

2. Moth-worms do not trouble strong colonies in modern apiaries. If you use modern hives with a dash of Italian blood in the bees, you will not be troubled with moth-worms.

3. Bees do not die for want of bee-bread in winter.

4. A good judge can not tell by the looks of a queen whether it is a good or poor one, although an experienced man can often tell an old queen from a young one. We can, however, very often judge of a queen by a glance at the comb that she has been laying in.

5. Queens often die without leaving a young queen. In that case the bees usually rear cells from eggs or larvæ left by the old queen.

6. Artificial swarming pays under some circumstances, but not when one desires to produce comb or extracted honey, and does not care for increase.

7. Yes, one can feed common sugar syrup—that made from granulated sugar is best.

8. There are some localities in the United States where bees do not have to be fed, as a rule; but any locality is liable some years to have a scarcity of honey. In such a case the bees require to be fed.

9. As to the different kinds of honey-bees I would name a few of the most prominent: Blacks, Carniolans, Syrians, Cyprians, Holy Land, Tunisians, Egyptians, Italians.

10. The sugar honey, so called, tastes a little different from real honey from the fields; but sugar honey must not be put on the market as honey, nor is it profitable to produce it. The nectar from the fields costs nothing, while the sugar itself does cost something.



NATIONAL BEE-KEEPERS' ASSOCIATION.

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FEES.—Annual membership fee, \$1.00. Remittances may be sent here or to General Manager as above.

LET us not forget that the Italian bees seem to resist the attacks of black brood very much better than the native stock. Better make an effort to supplant the blacks by the yellows.

ON THE FLY.

As you will see, I am "outing" it among bee-keepers of the great South and West; and while on the fly I am trying this editing business "at long range," *a la* Hill. And speaking of *hills* reminds me that it is rather up-hill business writing copy with a pencil on my grip, and grip on my slippery lap. Then when the train at a 40-mile speed jerks and lunges this way and that, my copy is more horrible than can be explained.

HONEY-PLANTS BY THE MILE.

I HAVE been riding all day in Texas at the rate of 40 miles per hour, and yet I can't get out of sight of some of the great honey-plants of the State. First and foremost for quality and quantity is the guajilla, pronounced *wawheea*. The honey from this, so they tell me, is literally water-white. Next is the cat-claw, a low tree that looks like the northern thornapple. The honey from this is very fine and white. The mesquite is another honey-tree that looks like our willows at a distance. It furnishes a sort of amber honey, and would rank favorably with any Northern amber. But I'll tell more about these plants later.

A BEE-KEEPER'S PARADISE.

En route to El Paso.—I have just come from a county about 40 miles square that has more bee-keepers to the square mile than any other locality of its size I ever visited. The inhabitants talk bees at the hotels, on the streets, and everywhere, just as farmers talk crops and business in the North. This county produces more honey than any equal area, I believe, in the United States. Some say that its yearly output is a *whole trainload of honey*; but many aver that this is too low, and that two whole trainloads would come nearer the truth. Of course this great amount doesn't go all in one lot, but in large and small shipments.

The average per colony is high, and there

is a honey crop every season. It is estimated that in this one county, outside of the towns, nearly one-half the population are bee-keepers.

The great bulk of the honey is of the very finest, and some of it is literally water-white. There are thousands and thousands of acres of honey-plants on cheap land; and bees—there are not enough to gather it all.

The bees commence swarming early in the spring; and, when the main honey-flows commence, actually stop swarming, destroy cells, kill off the drones, and commence business. Did you ever hear the like of it before? You say, "No, and no one else." Well, I think I can prove every statement; but for the present I am not at liberty to give the place or other details; but very shortly I'll tell the whole story, with some fine pictures.

LONG-TONGUED BEES FOR THE SOUTH.

DURING my short visit through Texas I have run across two prominent honey-plants that have deep flower-tubes; viz., horsemint and the buffalo clover. Either one has longer tubes than those of the red clover of the North. If long tongues are an advantage on red clover, they certainly would be on the plants above named. Nearly all of the small bell-shaped flowers of the Southland (and there are myriads of them) have long tubes. Mr. Doolittle's implied assumption, or one he apparently tries to bolster up, viz., that long tongues would amount to nothing in the South and a large part of the North, simply because they have no red clover, seems to one who is making a tour of five or six thousand miles through the greatest bee sections in the United States as a little queer. If long tongues are an advantage to the bees in getting the nectar in deep flower-tubes (and I have not yet positively affirmed that they were) then the great Southland (and it is truly great), and the whole of the north country, so far as bee-keeping is concerned, will have made one step forward.

FOUL BROOD IN MICHIGAN.

THE following from Geo. E. Hilton, the man who, more than any one else, got the Michigan foul-brood bill passed, will explain itself:

To the bee-keepers of Michigan.—So many letters are coming to me regarding the foul-brood law in Michigan that I will try through the journals to answer in a general way, and save myself valuable time at this hurrying time of year.

First, the law is in operation to-day, the inspector is appointed, and I feel very much relieved. I have made four trips to Lansing in behalf of the measure, and it required all the influence myself and others could bring to bear to secure its passage, its importance was so little understood. I have paid out about \$50.00 in expenses, to say nothing of the time I have donated, which would amount to as much more. And now I want the bee-keepers of the State to take advantage of and receive the benefits that may come from our efforts and the bill. I went to Lansing last week, spending a portion of three days, and succeeded in having John M. Rankin, our State Apiarist, appointed as our inspector, and I know of no one who can better attend to the work, or who is more worthy of the position. The work is under the management of the State Dairy and Food Commissioner, Hon. W. B. Snow, Lansing, Mich., to whom all communica-

tions should be sent. He is in direct communication with the Agricultural College, and will inform Mr. Rankin what is expected of him. We have but \$500 to use this season; but as the necessity of the work becomes apparent we shall be able to get more. The disease has an alarming foothold in our State, and it behoves every bee-keeper here to do his whole duty in assisting to exterminate this dread malady.

Trusting the above will make every thing plain, and save me many personal letters, I am

Very respectfully yours,

May 20.

GEO. E. HILTON,
Pres. Mich. State Bee-keepers' Ass'n.

Just after the above was put in type we received the following:

To the bee-keepers of Michigan.—I take this method of informing the bee-keepers concerning a few points in regard to the Michigan foul-brood law. A locality must be reported to the Dairy and Food Commissioner, Lansing, before it can be inspected, and as our funds are limited it would be a great saving if the bee-keepers would work with the Inspector by reporting all localities where foul brood exists, or where it is thought to exist, as soon as possible. If this is done it will enable the Inspector to plan a trip through the State, and cover the whole territory to be inspected at a much smaller traveling expense. Localities first reported will receive first attention; and those who neglect to report their localities until late will, in all probability, be obliged to wait until next year for assistance.

J. M. RANKIN.

COST OF DRONE COMB.

PROBABLY the majority of bee-keepers discourage the presence of much drone comb. Just as probably the majority have a good deal more drone comb than is profitable. The bee-keeper who has supplied his bees with full sheets of worker foundation is not safe for all future time. Here and there a mouse will nibble a hole in a comb in winter, and by one means and another there will be holes that the bees must fill in, which holes will almost invariably be filled with drone comb. If no attention is paid to the matter this will increase from year to year, but the bee-keeper perhaps gives it little thought. If his attention is called to it, he will say, "Yes, there is some drone comb in most of my hives that have comb of any age, but it doesn't amount to much. There isn't an average in each hive of more than enough to fill a pound section."

Let us figure up the cost of a piece of drone comb of that size—4 inches square, or 16 square inches. Counting 18 cells to the square inch, or 36 for the two sides, 16 square inches will contain 576 drone-cells. Suppose only one brood of drones is reared, and that each drone lives 60 days: what will be the cost of those 576 drones? Taking the estimate that it costs .0141 oz. of honey to rear a drone, and that it consumes .00635 ounce of honey daily, it will consume in 60 days .381 oz. of honey, which, added to the cost of rearing, makes .3951 oz. of honey that each drone costs. Multiply this by 576, and you have 227.5776 oz., or 14.2236 lbs. of honey that it has cost to rear and support the drones from that piece of comb the size of a pound section.

"But," you say, "I don't stand all that expense, for I slice off the heads of the sealed brood every time I go over them, so I stand only the trifle that it costs to rear them."

Suppose we figure on that. Multiply .0141 by 576, and you have 8.1216 oz. of honey that each slicing has cost you. Remember that this cost has occurred before the cells are

sealed; and as fast as you slice off the heads of the brood a fresh lot will be started so long as there is a moderate degree of storing. Suppose you begin slicing June 1, and slice every two weeks, making the last slicing July 13. That will make four times, costing you a trifle more than 2 lbs. Don't you believe you could go over 25 colonies in a day, cutting out the drone comb and putting patches of worker comb in place thereof? That would give you a payment of 50 lbs. of honey for the day's work, to say nothing of the saving in future years. *Cut out the drone comb.*

DEEP FLOWER-TUBES — ARE THEY CONFINED TO RED CLOVER?

THE matter of the depth of the flower-tubes of honey-plants is an unexplored region. We know that red clover secretes a large amount of nectar, and we know that the tubes are too deep for the tongues of hive bees in general. That is about as far as our knowledge about deep flower-tubes goes. Without having made any investigation, there has come to be a general belief among bee-keepers that might be formulated in a few words: "All honey-plants have flower-tubes of such depth that bees can get all the nectar from them with the single exception of red clover." Red clover is set off in a class all by itself. Why is that belief so general? What ground is there for it?

Suppose one lived on a barren rock, who knew nothing of the vegetable world except by reading, and were told that some specimens of the vegetable kingdom grow to a height of 100 feet, and some are but an inch in height. Would he at once conclude that every plant less than 100 feet is only an inch high? Would he not be more likely to think that there might be specimens at different heights all the way from an inch to 100 feet? Why should he not judge the same way about flower-tubes?

We know there are flower-tubes within easy reach of bees, and we know of at least one kind beyond their reach. Why should we not expect to find every shade of length between the two?

These thoughts were suggested by the following, from Dr. C. S. Phillips, Waco, Texas, in *Southland Queen*:

At this writing they are bringing in some honey from primrose. The country is a beautiful carpet of it. We have examined it, and find that it secretes a great deal of nectar; but the shank is long, and the bees' tongues are too short to get much. So you see we need long-tongued bees.

In this case it seems that a large quantity of nectar is secreted, but the bees can reach only a portion of it. Is there any reason to believe that such honey-plants are confined to Waco, Texas? Is it not possible that there may be in most places, if not everywhere, some honey-plants with flower-tubes entirely beyond the reach of ordinary tongues, some with such tubes that only a small part of the nectar can be obtained, some in which occasional tubes are too deep, and some from which all the nectar can be easily gathered?

It would be unwise to make dogmatic assertions; but there may be nothing criminal in

asking the question, "Are you sure that the value of long tongues for red clover may not be less than their value for other plants?"

CLIPPING QUEENS' WINGS ; WHY AND HOW.

ARE the queens all clipped? If not, why not? It's an advantage, particularly where bees are kept in thickly settled localities. Sometimes neighbors object to having the bee-keeper enter their premises when in pursuit of his bees. While he may lawfully pursue them, it will preserve better feelings if he has not go to do it.

HOW TO CLIP.

There are various good methods. A friend in New York says his hands are calloused, and it would not be safe for him to depend on the sensitiveness of his finger-tips to hold a queen by the thorax; so he picks her up by the wings with the left hand (thumb and fore finger); her majesty's wings are then in just such position as to be easily severed by a sharp knife, drawing it over the tip of thumb or fore finger, whichever way is handiest, letting her drop back on the comb or on the exposed frames.

By this method both or all wings are apt to be cut, and this friend cuts them quite closely, which has the advantage that such clipped queens can afterward much easier be found, having a snake-like appearance.

Another New York friend practices a different method. He picks up a queen by her wings as in the other case, but with his right hand, letting her grasp the thumb of his left hand with her feet. He then brings the tips of thumb and fore finger together vise-like, thus fastening or holding the queen by her feet. He then releases the wings and proceeds to cut any one wing or all of them, as he prefers, with a pair of scissors.

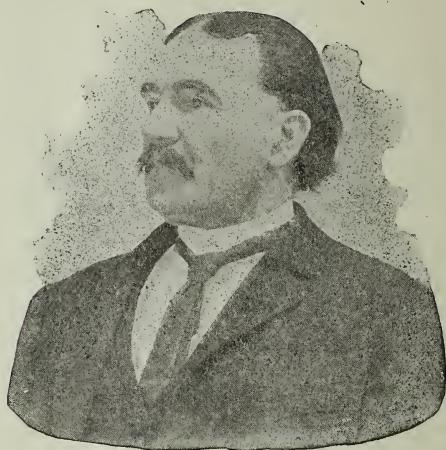
The writer has clipped a queen "on a run," sometimes; i. e., without holding her at all, simply by carefully lifting up one of her wings with one blade of a pair of scissors, and dropping it right there and then, while she was on the comb among her attendants.

When one practices clipping for a series of years he will be surprised how many colonies he will come across that have changed queens unbeknown to him. Half of the queens reared in 1899 were found superseded this spring in a large apiary in New York. We have had a similar experience in our yards. Unless a queen has been clipped, one can not be sure of her identity.

DR. MARTIN AND PAPER-COVERED HIVE-COVERS.

I AM pleased to introduce to our readers Dr. Martin, of Mercersburg, Pa. He is a bee-keeper who has been using paper-covered hive-covers for a good many years. One of these he sends that he has had in continuous use for 12 years. Although the paper is sound and good, some of the boards under it had rotted out. The paper he used in this case is what is known on the market as Neponset red-rope roofing-paper.

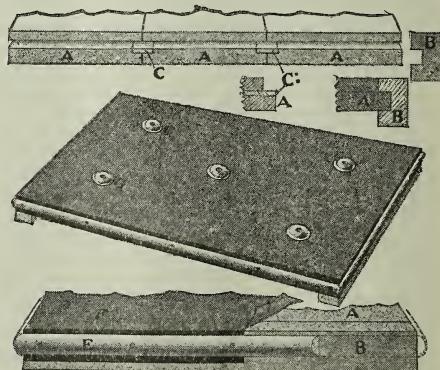
The secret of making this or any paper answer for covers, according to Dr. Martin, is cleating the cover all around where the paper is folded in such a way that the edges can not be torn up. On top are driven some large-headed tacks with washers. If such a cover



DR. G. M. MARTIN.

is thoroughly painted, at the start, and no sharp instrument is allowed to come in contact with the paper, it will probably last almost indefinitely.

A feature of the paper that is important is that it will take up a large quantity of linseed oil, and therefore paint applied to it will hang to it much more tenaciously than it would to the same surface of metal, or even of wood.



In the annexed engraving I present a sample of a cover made on Dr. Martin's plan. It is nothing more nor less than a flat cover made of one, two, or three pieces cleated all around at the ends and sides, as shown. Such a cover may also be made double (we have made them) that is, of two thicknesses, separated by quarter-inch strips of wood, dead-air spaces between, and then the whole covered with paper. I should imagine such a cover would be just the thing to suit another doctor, the M. D. at Marengo, Ill.

SWARMING PROBLEM SOLVED; THE INFLUENCE OF LOCALITY.

THIS trip, in many ways, has so far been a revelation and a surprise. More than ever I am impressed with the influence of locality. Some of the teachings in the ordinary standard text-books, viewed from the standpoint of some portions of this great, *great* country, seem more like idle tales than a sober statement of truth. Bees do many strange things in the "wild and woolly West" that they were never known to do down east. For example, what bee-keeper in the northern and eastern parts of our country ever knew his bees to commence swarming *before* the actual honey-flow, and then, when it did come on in real earnest, kill off their drones, destroy their cells—in short, stop swarming altogether, and get down to real business? Yet that is just what the bees in Uvalde Co., Texas, and Maricopa Co., Arizona, *do* do.

When Mr. D. M. Edwards, of Uvalde, Texas, told me of this as if it were a common trait among bees generally, I thought I misunderstood him. Said I, "Tell me that over again," and then he went on more elaborately to explain the same proposition. "Why," I exclaimed, with eyes all amazement, as if it were some sleight-of-hand trick, "tell me *how* you do it. I'd like to get hold of that trick," and I whipped out my note-book.

"No trick at all," he replied. "That's the way bees do down here."

"Wh-a-t?" I said. "How accommodating! Why, we poor fellows up north have been bothering our heads over this vexed and unsolved problem for years; and it is no nearer solution with us now than when we began. So it is literally true that you are not bothered with swarming when honey is coming in quite strong?"

He assured me for the third time that it was the fact. It appears that the early bloom yields just enough honey to stir up thoughts of increase among the bees, and then they swarm. When the heavy yields from mesquite, catclaw, and guajilla (pronounced *waw-hea*) come on, the bees conclude that they must quit their foolishness, and get down to business, which they do in two or three days, for they do not stop the swarming immediately. At this time it is not necessary to keep a man in the outyards longer.

When I got into Arizona I explained this queer phenomenon to the bee-keepers there, and was met with the calm statement that their bees were just as accommodating for them, "and," said they, "there's a lot more things in your text-books that won't work here at all;" and before I left the Territory I was convinced that they were right.

A good bee-keeper from the North, until he can unlearn some things and learn new ones, when he comes into these regions he is almost sure to meet with failure for the first year; and before he "gets on to" the Western notions, newly acquired, of the *very bees he brought south*, he is apt to be a sadder man, even if he is not a wiser one; and he is generally both before very long.

There is many another strange thing that I

have picked up that I will tell about in future issues; but for the present I must stop pushing my pencil, as the beautiful climate of Los Angeles that I have dreamed about these many moons is inviting me out—and, hark! I hear the footsteps of a bee-keeper just outside of my door. I gladly go to take in new sights, new beauties, and, perhaps, new and strange things.

RUNNING OUT-APARIES FOR COMB HONEY.

THE principal difficulty in running out-aparies for comb honey lies in the tendency of the colonies to swarm. This tendency is much stronger than when running for extracted honey. The greater amount of room, and the empty comb given the latter, seems to satisfy. Colonies run for comb honey must necessarily be crowded to produce best results, and swarms are likely to follow.

If we produce comb honey instead of extracted, as has been recommended, the apiarist must be prepared to meet the difficulty, and it will pay him to re-read the articles that have lately appeared on this subject in these columns.

It seems quite a number of bee-keepers in different parts of the land have hit on nearly the same method, unbeknown to each other, although, as Stachelhausen says, Gravenhorst, of Germany, was probably the first one who brought the method to a system and had it published. Gravenhorst's original management was, in brief, to draw on the weaker colonies for brood to make the already good colonies stronger; finally brush them from their combs, and give them empty hives. The gained brood-combs were used to make the next strongest colonies as populous as possible when they were brushed off also, etc. With a long continuous honey-flow this system may be all right, but *not so* with a honey-flow of short duration. As many colonies as possible should be brought into that prosperous condition, when they may be brushed off at one and the same time, and that time is at the beginning of the main honey-flow.

By the way, this method of brushing the bees from their combs, and putting them into empty hives (small brood-chamber) is a most excellent plan to treat such colonies as sulk or refuse to work in the sections. It seems to bring them to their senses.

Young swarms are nearly always fed for a few days after hiving, by the bee-keepers in Germany. We believe it is a good practice, particularly should it be rainy for a few days. Brushed swarms would come under the same head.

REPORTS that come from across the sea, from time to time, of bee-keepers' associations numbered not only by the hundred but by the thousands, make one wonder why in this regard the bee-keepers of this country should be so far behind. However, it is well to look on the bright side; and it is encouraging to know that there never was a time when the prospect was so encouraging for a large membership in the National Bee-keepers' Association. If not already a member, by all means send in your dollar.



What doest thou here, Elijah?—I. KINGS 19:18.

I pray not that thou shouldest take them out of the world, but that thou shouldest keep them from the evil.—JOHN 17:15.

I become discouraged sometimes. Several times of late I have had a longing to go away off to some other country. Yes, I have been so disheartened and discouraged that I have felt like saying to some of the people (I was going to say *good* people, but I guess I do not mean that), "If you are absolutely determined to have whisky, tobacco, gambling, and drinks all about you on every corner, I think we who love righteousness and hate iniquity had better go away by ourselves, and let you have things as you like them, without hindrance or restraint." And then I reflect that such things *have* been tried. People have gone off by themselves. They have put fences up, so to speak, to keep out the evil. But Satan gets through or over any fence that was ever constructed. The Christian people at Lakeside had quite a community where they could go and rest on the shore of the lake in their summer cottages; and that whole ground was under such strict police regulations that there was no profanity, no tobacco. They used to say with pride that no one could buy a cigar on the grounds. But pretty soon a fellow opened a cigar-stand on the other side of the fence, and did quite a trade by passing the cigars through the pickets and taking back the dimes and nickels. There was somebody who *wanted* cigars, even in that Christian institution. I do not know how it is going to be this summer, whether they will keep out the tobacco and such things or not. I hope they will not be weary in battling for purity and temperance, and I for one shall be glad to help them. Our own place of business is in many respects a model establishment. People come here and look us over, and sometimes they thank God for the privilege of even *looking* over a place managed with so much system and thoughtfulness for the wants and comforts of the employees. And yet sometimes I become impatient because things do not go on everywhere exactly after *my* fashion. May be I had better say after the *old* fashion. I hope the younger members of the firm will forgive me for just hinting at some of the things that are not just as *I* would have them—mind you, I do not *say* just as they *ought* to be, but because they are, perhaps, not just according to *my* notions.

It is customary of late for most periodicals to club with others; and publishers of magazines have been striving to outdo each other in their liberal efforts. Well, once when I came home from my travels I found the boys had remodeled the list of periodicals I recommended—yes, they had made startling offers to include some other periodical for the price of our own, or a little more than that. I remonstrated something like this:

"But, look here, boys; you have given great prominence to some periodicals that I do not consider at all standard, and some that I would hardly dare to recommend as home papers. Again, you have left out from your list entirely some of the agricultural papers that I read and endorse from beginning to end, week after week."

The reply was that they had made big offers on A, B, and C because they furnish them to us for premiums at an *exceedingly* low price, and that my favorite periodical was left out because it cost so much money.

There, friends, you see one of the prevailing errors of the present age. Even in the agricultural papers the cheapest is not the best by any means. No doubt merchants advertise certain goods extensively because they buy them cheap and can offer them at a low price and still *make money*, and so the regular standard goods (the best goods) are left in the background.

"But," said one of the boys, "what is your objection to *this* periodical?"

Then he unfolded its pages, showing me the pictures, clear print, etc.

"Is not that a nice paper? and is it not worthy of all the praise we give it?"

"Yes, boys, it is a nice-*looking* paper; but it contains articles on the cultivation of tobacco—tells young farmers all how to do it, *so as to make money*, without a single word in its pages in regard to the *terrible evils* that tobacco is bringing on us."

If I remember correctly, some of the boys laughed; but I think one of them said something like this:

"Why, father, you must not be so critical. It is a part of the business of an agricultural paper to tell how to grow all kinds of crops; and there is a great difference of opinion, you know, in regard to the use of tobacco."*

I presume he might have added, truthfully, that the majority of people—at least the majority of *men*, believe in tobacco, both in practice and theory.

"But, boys, *you don't*, any of you, believe in tobacco, either in practice or theory; and the paper I should have put at the head of the list, especially so far as recommending it as a *home paper*, you have not mentioned at all, just because it costs a little more money than the other." Now, I am going to speak right out in meeting just here, and say that the *Rural New-Yorker* will have nothing to do with the cultivation of tobacco; and, not only that, puts in wholesome cautions against things of this kind in almost every issue. I may be wrong in saying that the *Rural* is the *only* agricultural periodical that takes this stand. The *Philadelphia Farm Journal* comes pretty near it, and it is one of the cheap papers too. May God reward the publishers of these home papers, even if the farming people of our broad land do forget sometimes to give them

*At one time when this matter was up, one of the firm said, "Here is another thing: This paper you object to gives us more inquiries in response to our advertisement than any other one on the list." Then he picked up a record-book on a desk near by, that showed just how many inquiries each one of our advertising periodicals had brought in.

the encouragement they deserve in doing right.

Now, lest you think I am finding fault with the boys, let me say right here they always say, "Why, father, you go ahead and recommend any paper you think deserves encouraging words, and offer it to your readers at any price you choose." Our business is now getting to be so large that certain lines sometimes are neglected; and any one who notices the neglect sometimes takes the matter up, may be without inquiring about it of the one who formerly had it in hand.

This matter of periodicals is only one of several things that are not managed exactly as I would manage them if I had the strength of mind and body to take a bird's-eye view of *every thing* as I used to do years ago, but, as I have said or hinted, their way *may* be as near right, all things considered, as mine. Sometimes when I am very tired I begin to feel that, inasmuch as things will eventually fall into other hands, I had better not worry. And, again, it occurs to me that may be things might, in some respects, get on better if I were to go away, say to my Michigan ranch, and let the younger ones manage until they learn by experience, just as I have done.

Mrs. Root has sometimes asked, "Why can't the good people of a country have a nation of their own where they can put good men into office, and have the laws enforced, and keep entirely out those who love *only* iniquity?"

In the first place, dear friends, the very iniquity you seek in this way to avoid will very soon crop out in your own heart, especially when you get the idea in your head that, if you were alone on an island, like Robinson Crusoe, it would be an easy matter to have every thing pure and lovely. Jesus tells us in his own words, in the last text I have quoted, that it is not his will that we should retire from the world. I think he wants us planted here and there amid sin and crime, even though at times it does almost overpower us. A dear brother away off in California sends me a bright and encouraging letter which I wish to bring in right here:

Friend Root:—Long have I appreciated your efforts to make your journal a Christianizing influence in the homes of the bee-keepers of this country; but your article, "Traffic in Girls," which wife read to us last night, has stirred me up to do at once what I have long desired to do—that is, write and tell you about it. I feel like giving you all the help and encouragement I can; but all I know to do now is by way of offering a few suggestions.

In those cases of stealing, I fear you did not lay the ax at the root of covetousness as you might have done. It seems to me that no man will be in much danger of being robbed in the way you speak of if he lays up his treasures in heaven, and not upon the earth, as the Lord taught us to do. Was it not covetousness in one man that led him to hide his treasure? and covetousness in other men that led them to steal it? Had the good man spent his surplus time and money in a loving and faithful effort to convert those around him, might not the very ones that stole his money have been converted, and have become a blessing to society, instead of a curse? Or, perchance, it was the covetousness of this or some other man who stood high in the church, it may be, that was one of the causes that drove those men into a life of crime.

But, be this as it may, is it not true that a pure and united church is the only remedy for all these horrible evils of which you so justly complain? Our blessed Lord prayed for the unity of Christians that the world

might believe. To be united to each other, we must be united to God through Christ our Lord, the source of all power, to convert the world around us. Now, it seems to me that covetousness and other sins tolerated in the church prevent the unity, damage the salt, dim the light, and hinder the conquest of the world; and so much so that many seem disposed to abandon the church as the means to this end, and a multitude of societies have sprung up that propose to do the work that the church was designed of God to do; while many, like yourself, feel that the strong arm of the law should be invoked to arrest the tide of evil which the church seems powerless to contend with.

But, my dear brother, should not the child of God appeal to the Father rather than to the arm of flesh for help against the enemy of all righteousness? God is the author of all good, our refuge from the storm, the source of our strength, and should we not honor him before the people by looking to him in every time of need? Is not the church God's great life-boat? and is not the law for putting it in repair in all our homes? Should we not then repair it, launch it, and come to the rescue of a lost, ruined, and suffering world? Christian homes will save the girls. But while Christian evangelists have degenerated into professional revivalists, parents turn over the religious training of the children to the Sunday-school, and Christians are not united to one another in Christ their head, can we hope for much improvement in this poor sin-cursed world of ours?

Yours for a united church and a faithful membership,

H. H. HAWLEY.

Madera, Cal., May 24.

Amen, Bro. H. Most fervently do I unite with you in praying that God may give us a united church—a body of Christian people united as one through Christ Jesus, our Lord and Savior. You suggest that, if the good man had used plenty of money in trying to convert those about him (laid up treasures in heaven, instead of here on earth), there would have been no temptation to rob him.

Most heartily do I indorse your closing sentences, dear brother; right here comes that glorious promise, "Blessed are they which do hunger and thirst after righteousness, for they shall be filled." Surely we who do hunger and thirst after righteousness ought to be united; and we can be united through Christ Jesus. May God help us in working together for that united church you speak of.

When I read this, I had a longing to go back to pioneer times and live *without* money. God knows I do not want much of it any way—certainly not enough to tempt anybody to murder me for it. But, dear friends, people can not be kept from suffering if we go without money. The manufacturers of our land, where they pay people wages every Saturday night, are a great blessing. But *somebody* must handle quite a sum of money on pay-days, and the banks must take care of this money.† By the way bank safes are now being blown up, and the bankers and policemen killed and crippled for life, it would not be strange if every one should want pretty good pay for accepting these responsible positions.

† May be this is not just the place, but I wish to insist right here that everybody be urged to stop keeping money around the house. Think of the robberies and cruelties that have been inflicted just because it became noised abroad that somebody had money hidden on his premises. Do not keep your money in your house or on your person over night. Put it in the bank. If you sell property and take money, let everybody understand that it is taken to the bank at once. Many people are foolish in this respect. Even if banks do fail once in a great while, it is a thousand times better to lose money in this way than to have some of the family murdered because of the folly of keeping money in the house.

Then another thing, my good friends: We must face the fact that *money* is not at the bottom of *all* these evils. It is painful to me, at least, to be obliged to revert to the subject I spoke of in my article—the traffic in girls. You may say, "Let these fiends in human form have the money." Shakespeare said, "He who steals my purse steals trash." You may let it go that way if you choose. You may say the loss of a little money does not disturb your tranquillity or peace of mind, and perhaps you have a right so to do. A few days ago \$20 worth of postage-stamps was lost, and I made quite a little stir about it. Finally it occurred to me I was making too much fuss about the loss of a little money; and so after having done all I could to locate the loss I dropped the subject and trusted God for the outcome. I did not care so much about the money. I cared more because I feared by heedless methods of doing business we might have tempted some poor soul somewhere to be dishonest. In a week's time the stamps came back of their own accord. Nobody had been dishonest in the least—only a little careless. Well, we may philosophically decide not to worry about money; but we are just beginning to discover (and may God help us) there are other things than money that men covet when Satan has entered their hearts. You can let the *money* go, and say you are only so much poorer. But suppose your little *girl* (or your *neighbor's* girl) has been spirited away by the ruffians—what then? No, no, dear friend; we can not, like Elijah, go and sit down under a juniper-tree and ask God to take us out of the world. Jesus said, "I pray not that thou shouldst take them out of the world, but that thou shouldst keep them from the evil." Bad men are getting into office, and they will just chuckle among themselves, if we do as Elijah did. God forbid. I know, dear brother, that sin seems entering everywhere. Even ministers of the gospel are forgetting their sacred calling, and are stepping down into a whirlwind of worldly things. The great college town of Oberlin has for years past been celebrated for its strict and almost puritanical ideas. I am told that just recently one of its professors joined in a game of cards on one of the electric cars, and kept it up during a trip of several miles from one city to another. No doubt some of you will say I am behind the times in thinking there is any thing wrong in this. Dear friends, it is something very different indeed from what Oberlin has been in times past; and I feel sure, too, that this professor will not particularly command Oberlin to anybody as a place to send our boys and girls by such conduct as I have mentioned. May God help us in the conflict—a conflict we can not evade or dodge, especially if we profess to be *consistent* followers of Christ Jesus. And especially may he help us to work unitedly for that united church our brother has so well emphasized the need of, thus fulfilling the prayer of the Savior in the well-known text:

That they may all be one, as thou, Father, art in me and I in thee, that they also may be one in us.—JOHN 17:21.



FLORIDA TRAVELS, CONTINUED.

My next stop was at Mr. Bedell's, at Lake Helen. There are beautiful little lakes all around Lake Helen, as, in fact, there are almost everywhere else all through Florida. I can hardly believe there is another spot on the face of the whole earth where there are as many lakes of clean pure soft water as in Florida. The shores and the bottoms are mostly pure clean white sand—so clean that if you wade along the pebbly brink you do not even make the water muddy—at least a great part of them are like this. Mr. Bedell has all sorts of fruits and flowers, and a very pretty little place withal. Mrs. B. said that, as I seemed to be hunting up fish-stories, her husband had one to tell. One day a fish-hawk dove down into the lake close by their home, and brought up a fine large fish; but before he had got very far away an eagle, that had been *watching* to see what "luck" the hawk would have, pounced down on him, and, after a squabble in the air, the fish was dropped. Instead of falling back into the lake it dropped into Mr. Bedell's garden, and they had a very nice fish for dinner.

As one of the principal points of interest in that locality, Mr. Bedell took me over to the Stetson plantation at Deland, some five miles away. We rode in a brand-new buggy that Mr. Bedell said he ordered from one of the carriage-makers who advertised in GLEANINGS. That vehicle certainly *did* do us excellent service, especially when a cold rain caught us. Stetson is one of the Florida millionaires—at least they call him so. He is the founder of the Stetson institute or seminary, at Deland. I was invited to visit this great educational institute, but I could not spare the time. I wanted to see the great orange-sheds and pineapple-sheds of that locality. We found orange-trees inside of these inclosures, perfectly protected from frost, and bearing loads of great luscious fruit. These sheds have to be kept under lock and key; and, even as it is, they are troubled more or less from vandalism. The sides are simply a tolerably tight high board fence—sometimes 18 or 20 feet high. The roof is covered with movable panels. Various devices are used by different orange-growers for opening and closing the roof. They do not even try to have the whole thing so it will shut up air-tight. Many experiments have shown that this is not advisable. In the neighborhood of Deland, however, it is found necessary to have the roof so it can be opened during warm days, to give sunlight and air; and when a frosty time comes, these openings are pretty well closed. Then piles of firewood are located all through the shed. Sometimes a sort of rude stove keeps the wood from getting scattered about where the heat might endanger the trees near by. Unless a certain amount of ventilation

is allowed through the roof, the smoke and heat might do more harm than the frost. I can not just now be real sure, but I think I was told the most efficient apparatus (overhead), considering expense and every thing else, was panels made of boards to be moved back and forth by two men, one standing at each end of the panel. In this case the roof, of course, must be substantial enough so that men can walk over it when handling the panels or shutters. While cotton cloth is used by a good many, there is quite a disposition among other successful men to declare they do not want any more cloth flapping in the wind, getting torn, and subject to decay, etc.

I have already described the pineapple-houses, and pictured them. They are a good deal after the same plan, although in these further north, at DeLand, for instance, the openings between the slats must be closed, or partially closed, during very severe weather. We obtained permission at the office to look over the grounds. I can not tell you of all the beautiful scenes we saw during that one afternoon. At one place there is an alligator-pond with a big stout iron fence around it to keep the great reptiles from wandering away. Friend Bedell said he was going to get over the iron fence in order to get a closer view of the "animile." After cautiously keeping one hand on the fence we leaned over the stone abutment, and, sure enough, down in the clear water close by our feet was a motionless creature larger than any horse. It began to rouse up and move along the bottom of the pool, and just then I began making tracks for the fence. Friend Bedell assured me there was no danger. While the foreman of the ground was taking us from one interesting point to another I asked quite a good many questions as usual. Finally he turned to friend Bedell suddenly, and said :

"What name was it you called that man by just now?"

"I called him Root."

"Why, dear me! is this really Mr. A. I. Root whom I have been showing around, and who has been asking me all these questions? I looked at him several times, and was actually wondering what Yankee it was that wanted to know so many things, and also seemed to know quite a little himself."

Then he asked us if we had visited the little greenhouse. We told him we did. He asked us if we saw his particular pet right overhead in the peak of the roof. Neither of us remembered seeing it. You see we went into the greenhouse before we found the foreman; so we started back to the little greenhouse, or conservatory, perhaps I should say. Then for the first time I raised my eyes, and looked overhead. As I did so we both uttered exclamations of surprise and delight. It was a *Bougainvillea Sanderiana*. The vine started in one corner, and sent up a bare trunk like an old grapevine. This ran along without flowers or foliage till it was clear up in the peak of the roof. Then it spread out and made such a display of beauty and brightness as only the bougainvilles can make. A plant I saw in Bermuda covered a house with such a

mass of startling brilliancy as to call forth exclamations of pleasure and surprise from the passerby who was a *whole half mile* away. Now, that is not any "fish story." The first one I saw in Florida was in a garden near the Royal Poinciana. I saw a very pretty one last fall at the Ohio Experiment Station. A year ago last winter we purchased two plants at 15 cents each, to put in our little greenhouse. In the spring we set them in the open ground, and they made a great mass of green foliage, perhaps six feet across, but no bloom.

We moved them into the greenhouse, and succeeded in getting them to live without shortening any of the branches at all; but we carried along a great lot of dirt with them. During the latter part of the winter they were growing luxuriantly—great masses of green, but no sign of flowers. Those who knew, however, told me not to worry—in due time I would get my reward. Some time in March, little white blossoms began to show here and there, and a little later some leaves or bracts began to appear around the insignificant bloom, these new leaves or bracts gradually taking on a rose-colored hue; and they kept getting brighter and larger day after day and week after week. During the middle of April these two plants were the center of attraction, and they have been getting brighter and more fascinating all the time. The word *animated* seems to hit it better; and, no matter how dull I may feel (yes, I feel dull and tired sometimes), this *bougainvillea* always gives me a start. I feel like saying out loud, "O you precious bright little darling!" So many people have wanted just one little sprig of the brilliant plant that it has now been pretty well robbed of its luxuriant beauty. But still as I write this, June 15, it is just as brilliant, what there is of it, as it ever was. I can not understand why this wonderful and magnificent vine is not oftener seen in the greenhouses of private residences. So much for the *bougainvillea*.

Then the foreman said we would have to go into the house and see his wife. Her father is a bee-keeper away up in the North, and he takes (or did take) *GLEANINGS*. While looking about the various objects in the beautiful home I picked up a fine piece of porcelain painting. The lady of the house remarked, "O Mr. Root! I especially wanted to show you that picture. I suppose you know what it is."

"Why, it is the most beautiful painting I ever saw, of John Alden and Priscilla—at least that is what I should call it."

"Well, do you remember my husband's name is Alden?"

Sure enough, that was the name friend Bedell mentioned when he introduced us. The lady resumed :

"Well, we are descendants of John Alden;" and then there was a pleasant surprise all around. Dear friends, it may not be of any great moment who our ancestors were away back; but it is of great importance that we hand on down to the coming generations a character and a heritage that can be spoken of with pride *long after* we are dead and gone.



GINSENG AND ITS CULTURE; NOT SO DIFFICULT AFTER ALL.

Oh dear me! when shall I ever be old enough to cease making blunders? I felt so sure my ginseng plants were all dead I did not even mulch them last fall. After they died in the latter part of the summer or early fall, I left the slatted frame over them (to give them the right amount of shade), and paid no more attention to them all winter. Well, on May 14, imagine my surprise to see a good thrifty plant right over the spot where every plant died last fall. In fact, I think they will all live, with the exception of one plant, which was thrown out, root and all, by the frost. The fact is, my *treatment* was all right, and my *plants* were all right; but I was not sufficiently acquainted with the "critter" to know that its habit was to cease growing and die down so early. I think now I shall have to apologize to the ginseng advertisers so far as the plant being very difficult to grow is concerned. I was almost as bad as the Irishman who insisted that the mud-turtle was dead after its head was cut off. When they told him it was certainly alive because it was crawling around, he replied, "The cray-thur is dead, without any question, but he does not, as yet, seem to be *sinsible* of the fact."

COMPOST-HEAP FERTILIZER.

Year after year the most effective fertilizer we ever got hold of (not even excepting stable manure) is that from our compost-heap. We have tried it on strawberries, squashes, potatoes—in fact, all sorts of crops; and wherever this compost-heap is put out and plowed under we get the biggest crops. It is a heap of trash not far from the kitchen. All weeds and useless trash from the garden are piled on this heap; all slops from the kitchen are poured on with the other stuff; every thing that we wish to get rid of that will decay is dumped here. I sometimes almost have to quarrel to get the boys to stop putting on broken glass, crockery, brush, and the like. Well, this pile is allowed to grow until it begins to give off traces of unpleasant odor. Then we load it on a wagon, spread it out on some piece that is to be plowed, and turn it under. Several times I have thought I had got hold of a new variety of strawberries, potatoes, Hubbard squash, or something of the sort; but afterward I remembered that this plant with such wonderful vigor grew where we turned under the compost-heap. A great many times squashes, potatoes, and other vegetables come up self-sown where this heap is spread; and they have such remarkable vigor the boys hate to kill them, and hence let them grow. Then we have a great crop of something—a dozen big squashes on a single vine, a great lot of large potatoes as the product of a single sprout, and such like things. By all means have a compost-heap, and you will find it like money in

the bank, besides helping to keep things tidy around the premises.

THE RHODODENDRON.

Something more than twenty years ago a rhododendron was planted in our old cemetery, and I confess that for years I had forgotten it. But this morning, before breakfast, one of our men who lives near the cemetery came to the door with a most beautiful cluster of great purple blossoms, much like the azalea I have just been talking about, and asked me if I could tell the name. I replied at once:

"Why, Mr. K., you have got a most beautiful cluster of blossoms of rhododendron. Where in the world did you find it?"

"It is growing over in the old cemetery. It stands almost as high as your head, and I think there must be toward a hundred clusters of bloom, each one fully equal to this one I have in my hand."

You may be sure I got on my wheel, and in a little time went down to see it. There were 52 clusters, by actual count. The plant is worth going miles to see. We have one in our front yard, on the north side of our house, so as to be in the shade during the hottest part of the day; but it is not yet quite in bloom.

There has been considerable discussion as to whether a rhododendron is hardy enough to be left outdoors unprotected. Storrs & Harrison informed me that, if placed in partial shade, when once established they will live for years. This one at the cemetery is shaded during the hottest part of the day by some large forest-trees on the south. It is true, these beautiful growing plants cost quite a little to start with. I think they are quoted in the catalogs now at from 50 cents to \$1.00. When you get one established, so it will stand, blooming every year for twenty years or more, the cost per annum is almost insignificant. They remain in bloom quite a long time. The clusters and flowers are considerably larger than those of the azalea; and the foliage makes it a very handsome plant, even when not in bloom, for it is really a magnificent flowering evergreen.

AN IMPROVEMENT ON MY TRAP NEST.

Mr. Root:—I inclose a plan or model for a trap nest founded on the automatic nest you showed us on page 410. I think this catch would be an improvement over the one you suggested. Yours is the best trap nest I have seen, though I have plans for one that cost me a dollar. One thing to be remembered about your nest is, it must either be set under a platform or a cover provided, or the hens will get on top of it and close it. No cover is needed when used as an automatic nest, as it will open as soon as they get off. This catch, as you see, can be turned over on top of the nest, and instantly changed from a self-operating to a trap nest.

R. C. HINKLE.

Bellton, W. Va.

I will explain the model as follows: In order to make the nest so it will not rise up and let the hen out when she steps out of the nest, get a strip of wood say 2 feet long. Hinge one end at the corner N (see page 410). When used as an ordinary nest this strip lies flat down on the top of the nest, say along the line E. When you wish to trap the hen, throw it over so the loose end will rest on the ground.

This end catching on the ground will prevent the box from rising up when she steps off the nest. This device is probably cheaper and simpler than the arrangement I proposed, of having a piece of iron on the shelf C, that will drop off when the nest is shut down. By the way, I have learned that a box or basket does not need to be arranged so as to rise up very far. If it tilts easily the hen will soon learn to put her head under the edge and raise it up. In fact, they will exert quite a little force in order to get into the nest when you wish them to stay out. A sitting hen, for instance, will get in by some hook or crook almost in spite of you. My experience thus far convinces me it is exceedingly important to weed out the unprofitable hens. We have two White Plymouth Rocks that look so much alike it is almost impossible to tell one from the other, and yet one lays three times as many eggs as the other, and keeps it up right along. Without a trap nest we are blundering in darkness, not only in getting eggs for table use but in getting eggs to hatch from our most fertile layers.

OUR THREE SITTING HENS.

They hatched out 26 chickens, and not one of the 26 was lost. They are now six weeks old, and fully feathered out. It is no more than fair, however, to say that *Mrs. Root* took care of them. She was raised on a farm, and knows how to manage not only chickens but their mothers also. I did not know before what a wonderful amount of vitality a chicken has. When ours were three weeks old they ran through the wet grass from daylight till dark, during all that long cold rainy spell, and they just flopped their wings and had fun, rain or no rain. Of course, *Mrs. Root* kept them well fed (all they would take) with a good variety of nourishing food.

VALUABLE SECRETS, PROCESSES, ETC., OBTAINED BY SENDING A CERTAIN AMOUNT OF MONEY.

You see, friends, I have not become discouraged yet in thinking I may some time get hold of something really valuable in answering advertisements relative to wonderful secrets. The last one, I found in the *Agricultural Epitomist*. It reads as follows:

SECRETS OF CANNING WITHOUT CHEMICALS.

By sending A. D. Hursh, Supt. of the Springfield, Illinois, Canning Co., one dollar, families will receive instructions for canning all vegetables and fruits by proper application of heat on the kitchen stove. All goods will keep fresh, whole, and delicious for years. Mr. Hursh uses this formula in his factory work.

Off went the dollar. The advertisement does not say so, but I rather expected to get some sort of book for a whole dollar; but after considerable delay I received the following letter:

CANNING WITHOUT CHEMICALS.

The formulas that I give below are taken from the recipes that I use in canning in making all vegetables and fruits. Persons who follow the directions will be delighted with results, for the goods will keep delicious, whole, and fresh, indefinitely. In canning fruits and vegetables I recommend the use of tin cans whenever possible, for three reasons. First, the soldering makes them more secure from leaks; second, they save time; third, they protect the goods from the light at all times, thereby preventing

them from losing their color and flavor; and by using your solder-iron to melt the solder around the lid, and following it with an awl or stiff knife under the lid, the lid can be taken off, the can be emptied dried inside, and saved for another use. When tin cans are used they can be easily used to use solder for soldering the lids on, in place of sealings-wax used in ordinary canning, for the reason that all goods when hermetically sealed will swell or bulge at both ends after they are in boiling water long enough to cause the steam and gas to rise from the goods in the can. The solder is put on with a hot copper tipping-iron; and in order to make the solder spread and follow the iron, it is necessary to use a little flux or acid in the groove after the lid is on the can. The flux is made thus: Get a pint or more of muriatic acid, put it in an earthen vessel, and set it out of doors. Put into the acid all the zinc it will cut. When it quits sizzling and gets cold it can be diluted with water one-half. Then it is ready for use. Apply with a small brush in the groove of the can after the lid is on. Get a 3-lb. copper tipping-iron at the hardware store. The iron must be kept tinned so the solder will follow it around the lid.

TO TIN THE COPPER-IRON.

Heat the iron very hot, in the stove, so it will sizzle when stuck into the flux-pot. Take the iron out of the flux and rub the point and lower part with solder. Repeat this process until the solder sticks to the iron and looks as bright as silver; then it is ready for use. When the tin becomes burned off the iron by constant use, the tip of the iron may have to be filed down to a point, and till the copper shows bright, then tin again as directed.

HOW TO SOLDER.

Punch a small vent-hole in the center of the can-lid, with an awl. Put the lid on the can, apply a little flux or fine rosemary to the groove of the can, and hold the lid with the left hand; apply the solder to the iron with the right; move iron around slowly in the groove of the can; keep the point of the iron well in the groove. If the iron is hot enough the solder will flow freely, and follow the iron around till it flows together on both sides. After the groove is well filled with solder, and no pin-holes remain, tip the center (or vent) hole in the lid, and the can is ready for the process, or hot water.

RECIPES FOR CANNING.

We are now far enough advanced in the business to do some canning, and so we will proceed to can a gallon of sweet corn in quart tin cans. The amount of ingredients used in this gallon may be increased or diminished in the same proportion, according to the amount of corn used at one cooking. The corn should be taken fresh from the stalk, when it is in the milk. Cut the corn from the cob; scrape the cob with the back of the knife, to get all the juice; put the corn into a porcelain or tin kettle. To each gallon of cut corn add 8 ounces (one cup) of granulated sugar, and 4 ounces (half a cup) of salt, and one quart of water. Heat and stir all together until the sugar and salt are well dissolved, and then cover the can, and set it over a fire to stir the boil. Now draw this hot corn out of the kettle into your tin cans. Fill the cans within half an inch of the top. Solder the can air-tight at once. Have your wash-boiler two-thirds full of hot water; put the cans into the water and to process 3 hours from the time the water begins to boil; then take out and keep in a cool dark place till used. The cans must be kept at least four inches under water while boiling. They will have to be weighted with a board and brick. Note — it will be well to remember that corn, pumpkin, and peas must be kept hot from start to finish. They must be put in cans hot — sealed, and put into hot water at once, and processed the required time.

TO CAN PEAS.

Pick the peas before they get too hard. Hull them, put into a pan, pour boiling water over them, and keep them in it three minutes to blanch them. Dip them out of this water with a strainer-dipper into the cans. Fill the cans with an inch of the top. Have boiling salt water ready, made from one cup of salt to one gallon of water. Pour this, boiling, over the peas in the can till they are well covered, or nearly to the top of the can. Now solder the cans air-tight, and put into the boiler of hot water the same as corn. Process three hours.

TO CAN PUMPKIN.

Cut in small pieces. Boil in a pot with a tight lid until mushy. Add water to keep from burning. After they become soft, add boiling water, and mash with potato-masher till thin enough to dip into cans. Fill the cans nearly full; seal air-tight; put into a boiler with hot water, and boil two hours from the time the water begins to boil.

TO CAN TOMATOES.

Scald the tomatoes just enough to take the skin off. Take out the cores with the point of a knife. Put the tomatoes in the can whole. Press them down gently till the can is well filled. Seal air-tight; put into a boiler of hot water, and boil 30 minutes from the time the water begins to boil. Take out and keep in a cool dark place.

TO CAN STRING BEANS.

Take the strings from the beans. Place them in cans with the fingers till the can is well filled; then fill the cans with boiling salt water (same as peas), seal air-tight, place in a boiler of hot water, and process one hour from the time the water begins to boil. To have nice tender beans they must be picked before the beans swell the pod.

TO CAN ALL FRUITS.

To can fruit, care must be taken to cleanse it of all rotten, green, and sour specimens before canning. Fruits can be put up in plain boiling water, or in a syrup made of 2 lbs. of granulated sugar to one gallon of water. In either case the berries are put into cans, and the boiling syrup poured over them till the can is nearly full. Seal air-tight, place in a boiler of hot water, and use time according to the following table: For all berries, cherries, and grapes, 10 minutes from the time the water begins to boil. Apples and pears, pared

and quartered, 40 minutes from the time the water begins to boil; peaches, 20 minutes.

FOR CANNING IN GLASS JARS.

In using glass jars for canning, the same time is to be used as for tin cans; but the first half of the time the rubber must be left off, the lid screwed down only part way, to allow the gas to escape. The water in the boiler is to be within 3 inches of the top of the cans. After the first half of the time is exhausted, put the rubbers on, screw air-tight, add hot water till the cans are covered 4 inches, and proceed with the last half of the time. After the cans are taken out of the boiler, set them with the top end down, on white paper. If any show leaks, screw the lid tighter or press putty where the leaks are.

Very likely our friend thought if he got dollars enough he might have his directions *printed*. Perhaps I was the only fish that bit at his bait. I hope so, at least. Well, if he could not afford to print it I have done so for him. Let me see: If it goes to ten thousand different readers, and it is worth a cent to each one of them, I shall get back (or, rather, *you* will get back) \$100. So far as I know, the directions are all very good—that is, if any one wants to fuss to put up fruit and vegetables in this way when he can buy cans of tomato, corn, etc., at 10 cts. each, or three for a quarter. The whole thing illustrates the folly of undertaking to do work at home so as to compete with a canning-factory. It gives one the impression that "the Springfield Canning Co." must be a very small, one-horse concern.

Temperance.

We are glad to give place to the following:
ANTI-SALOON LEAGUE PAN-AMERICAN BUREAU OF INFORMATION AND LOCATION.

Comfortable rooms with reliable Christian homes can be secured through the League Bureau within easy reach of the exposition grounds at reasonable rates.

A corps of uniformed cadets, wearing the Anti-saloon League badge, will meet at depots and League headquarters all of our church and temperance friends, who by correspondence have secured rooms in advance through our Bureau.

The Anti-saloon League Encampment, or village of neat and attractive tents, floating the Anti-saloon League banner, will be a unique feature for accommodating those who prefer a cool tent to a hot room.

One large tent will furnish a delightful meeting place for social and public occasions.

Persons desiring to make definite arrangements for rooms or tents in advance, will please write promptly, enclosing postage for reply.

JOHN F. BRANT,
Supt. Buffalo District.

309 D. S. Morgan Building, Buffalo, N. Y.

We are pleased to note that the Anti-saloon League of the United States is going to be on hand at the great exposition, and look after temperance matters and the enforcement of temperance laws. We have just received the following:

Bro. Root.—Will you kindly make note in your excellent magazine that the New York Anti-saloon League and the Pan-American Exposition, Rev. John F. Brant, Supt. for Buffalo District, writes that arrangements are completed for holding a Pan-American Anti-saloon Congress in Buffalo, July 19–21. Speakers and workers of national reputation will address the various sessions of the congress. Buffalo has been getting ready by outlawing 55 concert saloons. The Buffalo Anti-saloon League leads in this crusade.

JOHN F. BRANT.

If you do not know, dear friends, how pleasant it is to meet with somebody who loves righteousness and hates iniquity (as you do), amid a great crowd at a national exposition, I can assure you that I do. Many times when

I have felt myself alone, and have begun to get homesick in a great crowd of unsympathizing people, it has rejoiced my heart, and made me breathe praises to God, to find somebody who could introduce me to those who love temperance, purity, and every thing that is good. May God be with the temperance people of our land as they work together to keep back the foe.

Here is something still later:

The Buffalo Anti-saloon League is making a vigorous effort to combat all forms of vice growing out of the saloon traffic during the Pan-American Exposition. It has met the concert-saloon issue, and won over before the city council, forbidding the issuing of any more concert-saloon licenses; it has even compelled the midway exhibitions to modify their performances by conforming to State laws and city ordinances. The League will be on guard day and night, with 100 churches and the best business men and professional men of Buffalo back of them.

The League Bureau of Information and Location is undertaking to direct Exposition visitors to safe and reliable Christian homes. Their office is 309 D. S. Morgan Building, Buffalo, N. Y.

JOHN F. BRANT, Supt.

While I am about it, let me mention another encouraging thing which I copy from the last *American Issue*:

MORE RAILROAD PROHIBITION.

A press dispatch from Frankfort, Ind., May 10, states that the Clover Leaf Railroad Company has issued a general order prohibiting its employees entering saloons at any time, either on or off duty.

The order also prohibits employees of the road from boarding or rooming at any place with which there is a bar connected directly or indirectly, and states that any violation will bring instant dismissal.

The order with reference to boarding-houses will affect fully 1000 men.

There is little danger of accidents from drunken employees on a road that has taken an advanced stand like this.

GOOD FOR CHICAGO.

"Grapho," in the *Advance*, says:

We have often heard that Chicago is a "pig-sticking" city. It is in order now to remark that one of our great packing-houses, Swift & Co., has put up a placard which says: "No profanity permitted in this house." Some of the big publishing houses, which are not sticking pigs, and which pride themselves on their literary taste, would do well to hang up a similar placard. They should not be less refined than a packing-house.

While reading the above I was wondering if it would hit anybody in our printing-office, and I drew a breath of relief when I decided, at least in my own mind, it would not hit any of our people—at least not while they are on our premises; and I hope and pray that it does not hit them anywhere.

Special Notices by A. I. Root.

THE DARLING STRAWBERRY.

This variety is ahead of all the rest in the matter of ripening, as usual, and this year it has given me one of my happy surprises in having almost every plant loaded with fruit. In fact, there are no plants on our grounds that have more berries. And, strange to tell, they are old plants that were moved from another bed some time last July.

A TEN-CENT BOOK ON GINSENG CULTURE.

It is quite refreshing to get a nice little book at the above price—a book containing modest and moderate statements—after the exaggerated figures we have had from other growers, and exaggerated prices, not

only on seeds and plants, but books also. This little book is fairly well illustrated, was issued in February, of this year, by J. W. Sears, of Somerset, Ky., and it has a date on it. A good many of these high-priced ginseng "books" have not even a date to tell whether they were printed during the current year or ten years ago.

THE DZIERZON THEORY.

I do not know but it is a pretty good thing that I am obliged to read all the proof before GLEANINGS goes to press since Ernest is away. Well, for some time back I have been feeling that most of our journals have been giving place to the discussion of questions that were pretty well settled years and years ago by long and laborious experiment. When GLEANINGS was started, every bee-keeper in the land was more or less familiar with the Dzierzon Theory; and they were forced to admit, too, that, although this little book is quite old, very little that is found in its pages has been found to be incorrect. Now, I do think every bee-keeper of the present day ought to read through, at least once in his life, the Dzierzon Theory. It is the cornerstone and solid rock upon which nearly all we know about bees is based. The little book is only 10 cents, postpaid. If any one thinks the price is too high I will take the responsibility of putting it 5 cents. We do not care whether we make money out of it or not; but we want the people to read it.

OUR ANEROID BAROMETERS.

Two troubles have met us in selling the small-sized instruments we have for years had for sale. We have been sending them by mail; but where the mail-bags are thrown or banged about, the instruments are very likely to be out of order when received; therefore we have decided hereafter to recommend in all cases having them sent by express. The charges will be seldom more than 25 cts. Another thing, we have heretofore used the smaller-sized instrument in order to lessen the expense of postage. After having carefully tested the different sizes we find rather more satisfactory work from the larger size, costing \$3.50 instead of \$2.50 as heretofore. These larger instruments, placed side by side with our mercurial barometer, do most excellent service, many times indicating the approach of a storm, even before the mercurial, because they are more sensitive. Instructions accompany each instrument—one set from the manufacturer, and one set that I have had printed for myself, after having watched the barometer almost daily for several years past. It is a pleasure to me to sell one of these new instruments, because I think they will give both pleasure and profit to the purchaser.

Since testing half a dozen of these instruments right beside our mercurial barometer, under all sorts of circumstances, I find the aneroid is affected more by change of temperature than the mercurial barometer. All barometers should be in the open air. The north porch, where the instrument will be sheltered from rain, and, as far as may be, from drifting snow, is a good place; and the aneroids especially should be where the sun does not strike them; for the heat of the sun, especially in hot weather, is very likely to cause a temporary fluctuation in the needle that might lead one astray if he did not make allowance for it.

MALTED NUTS: A NEW FOOD FOR INVALIDS.

I suppose most of our readers are more or less familiar with malted milk, which has been such a Godsend to thousands of people with weak digestion. But our enterprising friends of the Sanitas Food Co., Battle Creek, Mich., have, in my opinion, gotten out something that is even ahead of malted milk. They call it malted nuts, and say it is a pure product of nuts and nothing else. It is a grayish powder much resembling malted milk; but only two teaspoonfuls, dissolved in a cup of hot water, makes the most delicious and nourishing drink I ever got hold of. When faint with hunger and fatigue, either mental or physical, there is nothing in this world that braces me up so quickly as this drink. Tea and coffee are nowhere, in my opinion, I have been using it now considerably for over a month, and it does not seem to me as if I should ever want tea or coffee again, when I can get hold of this new substitute.

Another new thing in the way of good foods I wish to mention is granosse biscuit. With some of this, and malted nuts and a little hot water, I have a delicious meal with very little trouble to the good wife or anybody else. One of the problems just now is help

in the kitchen. Well, Mrs. Root and I are planning now so that we shall not need any hired help in our new summer cottage; and we desire to manage also so that she can have much leisure outdoors. We are planning to live so as to save her not only a lot of labor in preparing food, but the same in taking care of a lot of dishes. Just one cup and a spoon, something to hold the pure hot water, some malted nuts, good bread and butter, fruits and vegetables from our own garden, and we are all right. If we feel the need of fresh meat out there in the woods we can get fish very easily; or, failing in that, canned corn beef or roast beef at the country store near by. I am not sure, but I think the Sanitas Food Co., Battle Creek, Mich., would be glad to send any one a sample of malted nuts. We have given it around to our neighbors, especially those in feeble health, and the universal verdict is that it agrees exactly, even with those who have greatest trouble with indigestion.

One thing I almost forgot to add. There is more nourishment and strength in this new food, pound for pound, than any thing else I have ever come across in the way of food products. If bought in quantity, the dry powder costs only about 40 or 50 cts. per lb. But it is so light that a pound goes a great way. I think one could come nearer to carrying his dinner in his vest pocket with this new food than any thing else I know of.

WHAT CAN BE PLANTED IN THE MIDDLE OR LAST OF JUNE?

Almost every thing, for that matter; and it is particularly the time to plant beans—better now than earlier, because they are more likely to escape the bean-weevil. It may be a little late for the large lima bean, but is just right for Henderson's bush limas. We have a large lot of these that we are offering for only 10 cts. per quart, or 65 cts. a peck. Where there is difficulty in getting large lima beans to ripen, these smaller bush limas are almost sure to make a crop. We have also three or four bushels of the Prizewinner shell bean that is so early we grew two crops of them last year in the same ground. Quart, 20 cts. a peck, \$1.25. We have a nice stock of Banner field beans at the low price of 10 cts. a quart; 70 cts. per peck; bushel, \$2.75.

Sweet corn will be all right for roasting ears, and it is a good plan to plant three or four kinds the same day, from the earliest to the latest. Popcorn is all right if put in now. We have some extra nice rice popcorn at only 10 cts. a quart; peck, 65 cts.

Cucumbers I would put in just now as you do corn. Plant several kinds, from the earliest to the latest, all the same day.

Do not forget lettuce—that is, in localities where people have learned to use it the year round; and I believe it finds a ready sale in all the large cities every day in the year.

All kinds of melons will give a crop now unless we happen to have an extra-early frost.

In our locality we have no trouble in growing peas right through the hot weather. In fact, we have just been planting five different kinds, from the earliest to the latest, on the same day. Without any more attention this gives us green peas right along without any further care or trouble.

Pumpkins are all right; and if you have not put at least a few among your growing corn, better do so now. They are not only pretty but useful, and often make the most of their growth after the corn is cut, especially early corn. We have Early Sugar pumpkin seed for 30 cts. per lb.; field pumpkin, only 15 cts.

Beets, carrots, and salsify may all be put in now—yes, parsnips too, if you do not care to have them very large; and the medium-sized ones are better for table use than large ones.

Better get in some Hubbard squashes if you have not done so before.

Of course, you know it is just the time for putting out plants—cabbage, cauliflower, celery, tomatoes, etc.

It is a little early for turnips, except the Breadstone and large sweet rutabagas. They should be put in in June, because they need a long season.

If you order any of the above seeds by mail, please remember to add 9 cts. per lb. for packing and postage; beans and peas, 15 cts. a quart, and corn 12 cts. a quart, for postage.

Last, but not least, our favorite season for planting potatoes is the last of June. We still have plenty of potatoes for seed of the Early Ohio, and small lots of other kinds, at 75 cents per bushel right through. A leaflet giving reduced prices on seeds late in the season will be mailed on application.

REARING QUEENS IN SECTION BOXES.

Several pages are occupied in this issue in describing some very ingenious arrangements for rearing queens, not only in little hives, but even in a section box. Now, while I succeeded, years ago, in getting queens fertilized with only the brood contained in a single section box, I decided the matter was too difficult, and required too much constant supervision to make it practical. Very likely our friend "Swarthmore," with trained assistants under his supervision, could have queens fertilized by the hundreds, by his arrangement; but in reading it over I was strongly impressed with its being something familiar; and all at once the new book, "Egg Farm," came to my mind. Now, this latter book is wonderfully ingenious, and the story is exceedingly interesting; but careful investigation shows that no one has ever made it a practical success—not even the inventor himself. "Too much machinery" is the trouble. Quite a few of us have had more or less experience with inventions requiring too much complication. The cell-cups are, without question, all right. Our friend W. H. Pridgen has, along a similar line, been making quite a practical success, and I sincerely hope "Swarthmore" may do as well. I am sure he will accept this as a kindly caution (in regard to rearing queens in section boxes) from his old friend who has been "through the mill" pretty well.



SECOND-HAND CANS.

We have a few over 100 boxes of second-hand cans, 2 in a case, in fair condition, which we will sell, while they last, at half price, \$3.75 for 10 boxes, or 50 boxes at 35 cts. a box. Some of these cans are oxydized inside, and all need cleaning before using. They are whole and sound, and we believe will hold honey.

BEESWAX LOWER.

Beeswax is being offered much more freely, and market price is declining. We reduce the price we pay, till further notice, to 26 cents cash, 28 cents trade, for average wax delivered here. We have more than enough on hand to supply our trade for this season, but will take it in at above figure for the present to store for next season.

60-LB. HONEY-CANS.

The American Can Co., commonly known as the Can Trust, having absorbed, practically, all the factories making cans, have raised the price so that, if we had to buy of them at their present prices, we could not sell at the price listed in our catalog, at a profit. We are fortunate in having a carload on hand, bought before the rise in price. We have another carload contracted, to arrive this month or next, so we are in shape to fill orders from Medina for 60-lb. cans at the prices listed in our catalog till further notice.

MASON JARS.

Our carload of Mason jars, ordered last February, and promised for delivery in April, is just shipped as we go to press, and, we trust, will be here in good time to fill all orders booked before July 1. The price of jars in the market is advancing, and the outlook for an abundant fruit crop will tend to boost prices of jars still higher. We can not guarantee prices last announced, for any length of time, and will doubtless mark them up a little July first. If in need of jars, send on your orders. We have two or three gross left of quart jars, green glass, with aluminum caps, at 55 cts. per doz.; 6 doz., \$3.15; 12 doz., \$6.25. The jars in the car coming have porcelain-lined zinc caps, and the prices are:

GREEN GLASS.

1 qt., 1 doz., 58c; 6 doz., \$3.30; 12 doz., \$6.50.
2 qt., 1 doz., 80c; 6 doz., \$4.60; 12 doz., \$9.00.

FLINT GLASS.

1 pint, 1 doz., 60c; 6 doz., \$3.45; 12 doz., \$6.75.
1 qt., 1 doz., 65c; 6 doz., \$3.75; 12 doz., \$7.25.
2 qt., 1 doz., 90c; 6 doz., \$5.20; 12 doz., \$10.00.

All put up, one dozen in partitioned cases, and well made.



Every Year's Use

adds to the popularity of Page Fences. This season's sales surpass all previous records.

Box S. Page W. W. Fence Co., Adrian, Mich.

EGG FOOD! The kind that tones and keeps up the hen so that she simply must lay. **LEY'S POULTRY CONDITIONER** gives good red blood, healthy poultry; kills all disease germs, diseases and nourishes fowls big and little get all there is in the food when fed in conjunction with it. Price 25c pig; 5 for \$1. Ley's Thoroughbred Minorca eggs, \$1 for 13. Thoroughbred Belgian Hares. **Geo. J. Ley, Florence, California.**

W. H. Pridgen,
of Creek, Warren Co., N. C., whose money-order office is Warrenton, N. C., is now prepared to fill orders promptly with the Hutchinson "Superior stock," or golden unested queens at 75 cts. each, or queen-cups at \$2.00 per pound, postpaid.

FOR SALE.—Nuclei, in chaff-hive frames; three frames with queen, \$1.75. Good Italians. **H. L. FISHER**, New Paris, Ind. R. D. No. 2.

FOR SALE.—100 brood-combs in Hoffman frames, L. size, 12c each. **E. R. GIBBS**, Norwalk, O.

Wants and Exchange.

WANTED.—To exchange 100 extracting combs—L. size, for rifle or offers. **F. W. HUMPHREY**, Orono, Ct.

WANTED.—To exchange 50M polished sections (No. 1, nice) for beeswax, at a bargain. **W. H. NORTON**, Skowhegan, Me.

WANTED.—Seed buckwheat—silverhull or Japanese. I have bee hives and supplies of all kinds at a bargain. Some are slightly shopworn, but all in serviceable condition. **CASCADE BEE-HIVE CO.**, W. H. Putnam, Agent. River Falls, Wisconsin.

WANTED.—To exchange a pair of field and marine glasses (cost \$40) or Dobson banjo (cost \$35) for Italian bees on Hoffman wired frames. State condition and number of colonies offered. **DIAMOND**, 109 West 42d St., New York City.

WANTED.—To exchange first-class bee-keeping supplies for 2000 lbs. beeswax. Will allow 32c for nice wax. **W. H. NORTON**, Skowhegan, Me.

WANTED.—To exchange Japanese buckwheat at 80c per bu.—sacks, 15c extra—for bees in shipping boxes, if not too far away. **ALBERT L. MARTIN**, Leonardsburg, Del. Co., O.

WANTED.—To exchange a \$50 Columbia bicycle that has not been ridden 100 miles; never been rained on; out of the factory only about one year. I will sell it or exchange for clover honey, or two-frame Cowan extractor and new Dovetailed hives, to the value of \$35. **A. H. KANAGY**, Milroy, Pa.

WANTED.—A young man or married man, to work with 50 to 100 colonies of bees, and work on fruit farm the rest of his time. Good position to right man. Want one that likes to work with bees; don't care if he doesn't know so much about them, as I have my own method. Good house and plenty of fruit free to married man. **J. A. TAYLOR**, Wynnewood, Ind. Ter.

Black and Hybrid Queens for Sale.

Hybrid and Italian queens, from requeening an apiary, 25c each. **O. H. HYATT**, Shenandoah, Ia.